Vol. 993 Number 1

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

April 1, 1980

U.S. DEPARTMENT OF COMMERCE

Patent and Trademark Office

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OFFICIAL GAZETTE of the UNITED STATES PATENT and TRADEMARK OFFICE

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

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THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly, subscription $88.40 per annum, foreign mailing $22.10 additional; single copies $1.70 each.

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PRINTED COPIES OF PATENTS are furnished by the Patent and Trademark Office at 50 cents each; PLANT PATENTS in color, $1.00 each; copies of TRADEMARKS AND DESIGN PATENTS at 20 cents each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT consult the notice entitled "update of information concerning the Patent Cooperation Treaty" appearing in the OFFICIAL GAZETTE of February 12, 1980.

Note that since August 1, 1979 certain fees for the processing of International Applications have been increased. The current schedule of fees is as follows:

Transmittal fee	$35.00
Search fee	300.00
Basic fee (first 30 pages)	190.00
Basic fee supplement (each sheet over 30)	3.50
Designation fee	45.00

SIDNEY A. DIAMOND,
Jan. 28, 1980. *Commissioner of Patents and Trademarks.*

Board of Appeals Decisions Rendered in the Month of February 1980

Affirmed	173
Affirmed in part	20
Reversed	82
Total	275

National Technical Information Service

U.S. PATENT DATA FILES AVAILABLE THROUGH THE NATIONAL TECHNICAL INFORMATION SERVICE

The two basic U.S. patent information data files maintained by the U.S. Patent and Trademark Office (PTO) and a new bibliographic file are now publicly available on magnetic tape from the National Technical Information Service (NTIS), in collaboration with the PTO.

The newly centralized service is in response to President Carter's Industrial Innovation Initiatives (White House Release, October 31, 1979) aimed at increasing the effective transfer of technological information to help increase productivity and innovation in the United States.

NTIS is rapidly expending its acquisition of domestic and foreign machine-readable data. The PTO tapes are the first of several innovative data services that NTIS will announce this year.

The three PTO files are available as follows:

• *Patent Classification File.* The Classification File is produced twice a year at the end of June and December. The tapes contain classification information on some four million patents by patent number and classification.

As patent classification codes change, because of reclassification required by ever-changing research and technical advances, the information on the earlier patents is made current. At the end of 1979 the patent classification code system contained more than 100,000 classes and sub-classes.

• *Patent Full Text File.* This product is produced on a weekly basis and includes the full texts of approximately 1,500 patents. The full text file was initiated in August 1970 and expended until full coverage was achieved in 1974. A history file containing information on approximately 650,000 patents will also be made available. The full text file contains all the wording in the issued patents as well as descriptions of the drawings contained in the patents.

• *Patent Bibliographic File.* This recently developed file provides users with abstracts of the essential information contained in the Full Text File. Included are the patent title, inventor's name, date of issuance, filing date, assignee and other information. Issue dates are the same as for the Full Text Tape, and a comparable history file is available.

The *Classification File* will be leased on an annual basis, with the tapes issued at the end of either December and June or June and December (two consecutive tapes).

The *Full Text* and *Bibliographic Files* will also be leased on an annual basis, January through December.

A test tape containing full text information on about 300 patents will be made available to potential users, permitting them to become familiar with the data before making a commitment to lease one or all of the files.

Prospective users may obtain sample lease agreements, fee structures and test tapes from the Patent Files Product Manager, National Technical Information Service, 5285 Port Royal Road, Springfield, Virginia 22161, Phone Area Code (703) 557-4806.

JOSEPH L. CAPONIO,
Deputy Director, National Technical Information Service.

[FR Doc. 80-3792 Filed 2-5-80; 8:45 am]

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,004,916, Re. S.N. 069,207, Filed Aug. 23, 1979, Cl. 75/256, GREEN BALLS FORMED BY AGGLOMERATING WET-COLLECTED FUME PRODUCED IN METALLURGICAL FURNACES, John W. Kreiger, Owner of Record: *Bethlehem Steel Corporation, Bethlehem, Pa.,* Attorney or Agent: Joseph J. O'Keefe, et al., Ex. Gp.: 111

4,018,617, Re. S.N. 068,412, Filed Aug. 21, 1979, Cl. 106/85, STABILIZED MIXTURE, John P. Nicholson, Owner of Record: *Inventor,* Attorney or Agent: Arthur Raisch, et al., Ex. Gp.: 113

4,119,026, Re. S.N. 110,247, Filed Jan. 7, 1980, Cl. 100/89, MACHINE FOR FORMING A ROUND BALE OF FIBROUS AGRICULTURAL MATERIAL, Hans Otto Sacht, Owner of Record: *Gebruder Welger, Wolfenbuttel, West Germany,* Attorney or Agent: David Toren, et al., Ex. Gp.: 242

PATENT NOTICES

Certificates of Correction for the Week of April 1, 1980

Re. 30,168	4,143,054	4,170,636	4,178,288
D. 253,804	4,145,303	4,171,666	4,178,312
3,751,399	4,148,784	4,171,932	4,178,314
3,826,728	4,149,176	4,172,044	4,178,375
3,969,150	4,150,942	4,172,050	4,178,379
3,993,679	4,150,946	4,172,381	4,178,392
4,024,618	4,151,255	4,172,524	4,178,423
4,025,443	4,151,543	4,172,772	4,178,442
4,025,869	4,151,779	4,172,834	4,178,445
4,065,266	4,152,173	4,173,220	4,178,770
4,067,282	4,156,719	4,173,500	4,178,972
4,072,690	4,158,459	4,173,547	4,179,297
4,090,010	4,159,755	4,173,649	4,179,335
4,097,833	4,160,079	4,174,184	4,179,345
4,099,383	4,160,650	4,174,366	4,179,346
4,100,532	4,160,803	4,174,734	4,179,410
4,101,555	4,162,990	4,174,777	4,179,441
4,104,360	4,163,617	4,174,794	4,179,689
4,108,755	4,163,906	4,174,828	4,179,776
4,108,757	4,165,465	4,175,313	4,179,867
4,113,872	4,165,571	4,175,540	4,179,913
4,115,232	4,165,916	4,175,552	4,180,116
4,115,807	4,165,919	4,175,953	4,180,189
4,119,494	4,166,856	4,176,213	4,180,194
4,120,028	4,166,881	4,176,392	4,180,210
4,124,804	4,167,097	4,176,712	4,180,505
4,124,821	4,167,275	4,176,844	4,180,573
4,126,375	4,167,372	4,177,067	4,180,650
4,126,550	4,167,752	4,177,312	4,180,651
4,127,110	4,168,237	4,177,320	4,180,674
4,127,687	4,168,427	4,177,490	4,180,802
4,129,458	4,168,496	4,177,514	4,180,838
4,137,552	4,168,526	4,177,562	4,180,990
4,138,424	4,168,614	4,177,701	4,181,730
4,139,617	4,168,953	4,177,710	4,181,809
4,140,093	4,169,258	4,177,801	4,181,911
4,140,175	4,169,734	4,177,812	4,181,916
4,140,362	4,170,170	4,178,081	4,183,045
4,142,043	4,170,561	4,178,243	4,183,696
4,142,695			

Dedication

4,056,475.—*Hanslothar Sander, Siegfried Matusch* and *Uwe Hemminghaus*, Braunschweig, Germany. PULP CATCHER. Patent dated Nov. 1, 1977. Dedication filed Nov. 28, 1979, by the assignee, *Braunschweigische Maschinenbauanstalt.*

Hereby dedicates the entire remaining term of said patent.

Disclaimers

Design 250,867.—*Clayton A. Elliott*, Union, N.J. AN ADJUSTABLE DRAWER UNIT OR SIMILAR ARTICLE. Patent dated Jan. 23, 1979. Disclaimer filed Dec. 28, 1979, by the inventor.

The term of this patent subsequent to January 23, 1993 has been disclaimed.

Design 252,436.—*Clayton A. Elliott*, Union, N.J. SIDE SUPPORT PANEL FOR PULLOUT DRAWER UNITS. Patent dated July 24, 1979. Disclaimer filed Dec. 28, 1979, by the inventor.

The term of this patent subsequent to January 23, 1993 has been disclaimed.

Design 252,968.—*Clayton A. Elliott*, Union, N.J. FURNITURE DRAWER. Patent dated Sept. 25, 1979. Disclaimer filed Dec. 28, 1979, by the inventor.

The term of this patent subsequent to January 23, 1993 has been disclaimed.

3,640,133.—*Robert B. Adams*, Tredyffrin Township, Chester County, Pa. FLOWMETER. Patent dated Feb. 8, 1972. Disclaimer filed Jan. 31, 1980, by the inventor and *Moore Products Co.*, the assignee consenting.

Hereby enters this disclaimer to claims 10 and 11 of said patent.

3,785,424.—*Sigurd A. Rishovd*, Minneapolis, Minn. TIRE BEAD SEATER. Patent dated Jan. 15, 1974. Disclaimer filed Dec. 14, 1979, by the assignee, *B & J Manufacturing Company.*

Hereby enters this disclaimer to claims 3 and 20 of said patent.

4,046,475.—*Thomas Allan Booth*, Flanders, N.J. and *Frank Lynn Scholten*, Katonah, N.Y. EXPOSURE CONTROL SYSTEM FOR PHOTOCOMPOSITION MACHINES. Patent dated Sept. 6, 1977. Disclaimer filed Nov. 28, 1979, by the assignee, *AM International, Inc.*

Hereby enters this disclaimer to claims 1 and 2 of said patent.

4,065,559.—*James D. Froyd*, Fountaintown, Ind. DINITROANILINES FOR CONTROL OF SOILBORNE PHYTOPATHOGENS. Patent dated Dec. 27, 1977. Disclaimer filed Feb. 4, 1980, by the assignee, *Eli Lilly and Company.*

Hereby enters this disclaimer to claims 1–8, all the claims of said patent.

4,156,722.—*James D. Froyd*, Fountaintown, Ind. DINITROANILINES FOR CONTROL OF SOILBORNE PHYTOPATHOGENS. Patent dated May 29, 1979. Disclaimer filed Feb. 4, 1980, by the assignee, *Eli Lilly and Company.*

Hereby enters this disclaimer to claims 1–11, all the claims of said patent.

Errata

3,838,390.—*D. Michon*, NEW OPERATIONAL DISPOSITION FOR OBTAINING THREE-DIMENSIONAL SEISMIC INFORMATION. In the notice of Adverse Decisions in Interferences appearing on page 20 in the OFFICIAL GAZETTE of Feb. 19, 1980, claims of said patent were erroneously mentioned and should be corrected to read as follows: Claims 1–3, 8 and 9.

4,056,475.—*Hanslothar Sander, Siegfried Matusch* and *Uwe Hemminghaus*, PULP CATCHER. In the notice of Disclaimers appearing on page 11 in the OFFICIAL GAZETTE of Feb. 12, 1980, all references to Patent No. 4,056,475, should be deleted as the patent should not have been disclaimed.

1979 Commissioner's Annual Report

The Annual Report of the Commissioner of Patents and Trademarks for fiscal year 1979 has been printed. A limited number of copies are available for distribution to the public free of charge. Single copies may be obtained by writing to the Office of Information Services, Room CP 3–1D03, Washington, D.C. 20231.

LUTRELLE F. PARKER,
Acting Commissioner of Patents and Trademarks.

Dated: Feb. 27, 1980.

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for domestic and, possibly, foreign licensing in accordance with the licensing policies of the agency-sponsors.

Copies of patents cited are available from the Commissioner of Patents and Trademarks, Washington, D.C. 20231, for $.50 each. Requests for copies of patents must include the patent number.

Copies of patent applications cited are available from the National Technical Information Service (NTIS), Springfield, Va. 22161 for $5.00 each ($10.00 outside North American Continent). Requests for copies of patent applications must include the patent application number. Claims are deleted from patent application copies sold to avoid premature disclosure. Claims and other technical data will usually be made available to serious prospective licensees upon execution of a non-disclosure agreement.

Requests for information on the licensing of particular inventions should be directed to the addresses cited for the agency-sponsors.

DOUGLAS J. CAMPION,
Program Coordinator,
Office of Government Inventions and Patents,
National Technical Information Service,
U.S. Department of Commerce.

U.S. DEPARTMENT OF AGRICULTURE

Program Agreements and Patent Branch, Administration Service Division, Federal Bldg., Science & Education Administration, Hyattsville, Md. 20782

Patent application 6–055,116. Novel Aroid Products. Filed July 5, 1979.

Patent application 6–064,678. Foam Flotation Process for Separating 'Bacillus Thuringiensis' Sporulation Products. Filed Aug. 8, 1979.

Patent 4,166,107. Sustained Release Bolus Formulations Containing Insect Growth Regulators for Control of Livestock Pests. Filed July 25, 1978. Patented Aug. 28, 1979. Not available NTIS.

Patent 4,170,631. Controlled Release Formulations of Douglas-Fir Beetle Anti-Aggregative Pheromone, 3-Methyl 2-Cyclohexen-1-One. Filed July 31, 1978. Patented Oct. 9, 1979. Not available NTIS.

U.S. DEPARTMENT OF TRANSPORTATION

Patent Counsel, 400 7th St., SW., Washington, D.C. 20590

Patent application 6–090,744. Longitudinal Rail Profilometer. Filed Nov. 2, 1979.

U.S. ENVIRONMENT PROTECTION AGENCY

Room W513, 401 M St., SW., Washington, D.C. 20460

Patent 4,081,513. Disposal of Sulfur Oxide Pollutant-Containing Gas. Filed Dec. 9, 1975. Patented Mar. 28, 1978. Not available NTIS.

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

National Institutes of Health, Chief, Patent Branch Westwood Bldg., Bethesda, Md. 20205

Patent application 954,218. Aziridinyl Quinone Antitumor Agents. Filed Oct. 24, 1978.

TENNESSEE VALLEY AUTHORITY

Division of Law, Muscle Shoals, Ala. 35660

Patent 4,169,882. Purification of Phosphoric Acid With Oxalic Acid. Filed Nov. 13, 1978. Patented Oct. 2, 1979. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters—NASA Code GP–2, Washington, D.C. 20546

Patent application 6–053,571. Safety Shield for Vacuum/Pressure Chamber Viewing Port. Filed June 29, 1979.

Patent application 6–073,579. Multistage Depressed Collector for Dual Mode Operation. Filed Sept. 7, 1979.

Patent application 6–076,643. Baseband Signal Combiner for Antenna Array. Filed Sept. 18, 1979.

DEPARTMENT OF THE ARMY, OTJAG

Chief, Intellectual Property Division, Room 2D 444 Pentagon, Washington, D.C. 20310

Patent application 6–005,255. Method and Apparatus for Calibrating Gyroscopically-Stabilized, Magnetically Slaved Heading Reference System. Filed Jan. 22, 1979.

Patent application 6–008,675. Optical Indexing System. Filed Feb. 2, 1979.

Patent application 6–009,003. Telemetric System. Filed Feb. 5, 1979.

Patent application 6–020,881. Preparation of Hexanitrostilbene With Copper Ammino Compounds. Filed Mar. 15, 1979.

Patent application 6–020,889. Preparation of Hexanitrosilbene. Filed Mar. 15, 1979.

Patent application 6–020,890. Differential Pressure Gauge. Filed Mar. 15, 1979.

Patent application 6–024,140. In-Pore Telemetry Information Measuring System. Filed Mar. 26, 1979.

Patent application 6–026,371. Pressure Relief Manometer. Filed Apr. 2, 1979.

Patent application 6–027,350. Gas-Liquid Absorption Apparatus and Method. Filed Apr. 5, 1979.

Patent application 6–029,809. Pyrophoric Flame Composition. Filed Apr. 13, 1979.

Patent application 6–037,210. Process and Composition of Low Toxicity for Preparing Aluminium Surfaces for Adhesive Bonding. Filed May 9, 1979.

Patent application 6–042,825. Antipropagation Explosive Packaging Means. Filed May 29, 1979.

Patent application 6–043,767. Solid Propellant Grain for Improved Ballistic Performance of Guns. Filed May 30, 1979.

Patent application 6–043,876. Active Optical Filter. Filed May 30, 1979.

Patent application 6–044,125. Rapid Water Activity Determining Device and Method. Filed May 31, 1979.

Patent application 6–044,898. Apparatus for Measuring Anti-Wear Properties of Pressurized Liquids. Filed June 4, 1979.

Patent application 6–046,733. Laminated, Highly Sorbent, Active Carbon Fabric. Filed June 7, 1979.

Patent application 6–046,961. Method of Growing Single Crystals. Filed June 9, 1979.

Patent application 6–050,288. Projectile. Filed June 20, 1979.

Patent application 6–051,780. Multilayer Laminate of Improved Resistance To Fatigue Cracking and Method for Producing Same. Filed June 25, 1979.

Patent application 6–055,716. Apparatus and Method for Determining Electrical Conductivity of Water Vapor. Filed July 9, 1979.

Patent application 930,083. Centrifugal Ball Cam Locking Device. Filed Aug. 1, 1978.

Patent application 933,240. A Direct Method of Measuring the Intensity of Light and Other Radiation Sources Without Knowledge of the Source Distance. Filed Aug. 14, 1978.

Patent application 937,244. Phase Measurement Device. Filed Aug. 28, 1978.

Patent application 959,542. Electronic Velocimeter. Filed Nov. 13, 1978.

Patent application 965,955. Non-Spill Gas-Liquid Contact Unit. Filed Dec. 4, 1978.

Patent application 970,403. Non-Polluting Process for Desensitizing Explosives. Filed Dec. 18, 1978.

U.S. DEPARTMENT OF AGRICULTURE

Program Agreements and Patent Branch, Administration Service Division, Federal Bldg., Science and Education Administration, Hyattsville, Md. 20782

Patent application 6–053,476. Cyclone Dust Analyzer for Determining Microdust Content in Fibers. Filed June 29, 1979.

Patent application 6–057,858. Shrinkproofing Wool With Copper Salts of Carboxylic Acids. Filed July 16, 1979.

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

National Institutes of Health, Chief, Patent Branch Westwood Bldg., Bethesda, Md. 20205

Patent application 6–058,177. Carbocyclic Analogs of Cytosine Nucleosides. Filed July 17, 1979.

Patent application 6–082,056. 7-alpha-Methylnorethindrone Enanthate and Its Use in Long Term Suppression of Fertility in Female Mammals. Filed Oct. 5, 1979.

U.S. DEPARTMENT OF THE NAVY

Assistant Chief for Patents, Office of Naval Research
Code 302, Arlington, Va. 22217

Patent 3,273,376. Static and Dynamic Calibration Vessel for Pressure Gages. Filed Oct. 30, 1964. Patented Sept. 20, 1966.

Patent 4,152,987. Impermeable Polymer Bomb Liner for Use With TNT Containing Explosives. Filed Feb. 18, 1977. Patented May 8, 1979.

Patent 4,153,917. Image Stabilizer System for Stop-Action Playback. Filed Jan. 23, 1978. Patented May 8, 1979.

Patent 4,154,385. Single Filament Fiber Optic Cable Parting Tool. Filed Dec. 12, 1977. Patented May 15, 1979.

Patent 4,157,861. Optical Beam Steering System. Filed Aug. 3, 1977. Patented June 12, 1979.

Patent 4,160,033. Method for the Control of Mosquitos by the Use of Film-Forming Materials. Filed Jan. 31, 1977. Patented July 3, 1979.

Patent 4,160,579. Tapered Velocity Electro-Optical Waveguide Switch. Filed May 3, 1978. Patented July 10, 1979.

Patent 4,162,397. Fiber Optic Acoustic Sensor. Filed June 28, 1978. Patented July 24, 1979.

Patent application 6-009,003. Telemetric System. Filed Feb. 5, 1979.

Patent application 6-020,881. Preparation of Hexanitrostilbene With Copper Ammino Compounds. Filed Mar. 15, 1979.

Patent application 6-020,889. Preparation of Hexanitrosilbene. Filed Mar. 15, 1979.

Patent application 6-020,890. Differential Pressure Gauge. Filed Mar. 15, 1979.

Patent application 6-024,140. In-Pore Telemetry Information Measuring System. Filed Mar. 26, 1979.

Patent application 6-026,371. Pressure Relief Manometer. Filed Apr. 2, 1979.

Patent application 6-027,350. Gas-Liquid Absorption Apparatus and Method. Filed Apr. 5, 1979.

Patent application 6-029,809. Pyrophoric Flame Composition. Filed Apr. 13, 1979.

Patent application 6-037,210. Process and Composition of Low Toxicity for Preparing Aluminium Surfaces for Adhesive Bonding. Filed May 9, 1979.

Patent application 6-042,825. Antipropagation Explosive Packaging Means. Filed May 29, 1979.

Patent application 6-043,767. Solid Propellant Grain for Improved Ballistic Performance of Guns. Filed May 30, 1979.

Patent application 6-043,876. Active Optical Filter. Filed May 30, 1979.

Patent application 6-044,125. Rapid Water Activity Determining Device and Method. Filed May 31, 1979.

Patent application 6-044,898. Apparatus for Measuring Anti-Wear Properties of Pressurized Liquids. Filed June 4, 1979.

Patent application 6-046,733. Laminated, Highly Sorbent, Active Carbon Fabric. Filed June 7, 1979.

Patent application 6-046,961. Method of Growing Single Crystals. Filed June 9, 1979.

Patent application 6-050,288. Projectile. Filed June 20, 1979.

Patent application 6-051,780. Multilayer Laminate of Improved Resistance To Fatigue Cracking and Method for Producing Same. Filed June 25, 1979.

Patent application 6-055,716. Apparatus and Method for Determining Electrical Conductivity of Water Vapor. Filed July 9, 1979.

Patent application 930,083. Centrifugal Ball Cam Locking Device. Filed Aug. 1, 1978.

Patent application 933,240. A Direct Method of Measuring the Intensity of Light and Other Radiation Sources Without Knowledge of the Source Distance. Filed Aug. 14, 1978.

Patent application 937,244. Phase Measurement Device. Filed Aug. 28, 1978.

Patent application 939,542. Electronic Velocimeter. Filed Nov. 13, 1978.

Patent application 965,955. Non-Spill Gas-Liquid Contact Unit. Filed Dec. 4, 1978.

Patent application 970,403. Non-Polluting Process for Desensitizing Explosives. Filed Dec. 18, 1978.

U.S. DEPARTMENT OF AGRICULTURE

Program Agreements and Patent Branch, Administration
Service Division, Federal Bldg., Science and Education
Administration, Hyattsville, Md. 20782

Patent application 6-053,476. Cyclone Dust Analyzer for Determining Microdust Content in Fibers. Filed June 29, 1979.

Patent application 6-057,858. Shrinkproofing Wool With Copper Salts of Carboxylic Acids. Filed July 16, 1979.

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

National Institutes of Health, Chief, Patent Branch
Westwood Bldg., Bethesda, Md. 20205

Patent application 6-058,177. Carbocyclic Analogs of Cytosine Nucleosides. Filed July 17, 1979.

Patent application 6-082,056. 7-alpha-Methylnorethindrone Enanthate and Its Use in Long Term Suppression of Fertility in Female Mammals. Filed Oct. 5, 1979.

U.S. DEPARTMENT OF THE NAVY

Assistant Chief for Patents, Office of Naval Research
Code 302, Arlington, Va. 22217

Patent 3,273,376. Static and Dynamic Calibration Vessel for Pressure Gages. Filed Oct. 30, 1964. Patented Sept. 20, 1966.

Patent 4,152,987. Impermeable Polymer Bomb Liner for Use With TNT Containing Explosives. Filed Feb. 18, 1977. Patented May 8, 1979.

Patent 4,153,917. Image Stabilizer System for Stop-Action Playback. Filed Jan. 23, 1978. Patented May 8, 1979.

Patent 4,154,385. Single Filament Fiber Optic Cable Parting Tool. Filed Dec. 12, 1977. Patented May 15, 1979.

Patent 4,157,861. Optical Beam Steering System. Filed Aug. 3, 1977. Patented June 12, 1979.

Patent 4,160,033. Method for the Control of Mosquitos by the Use of Film-Forming Materials. Filed Jan. 31, 1977. Patented July 3, 1979.

Patent 4,160,579. Tapered Velocity Electro-Optical Waveguide Switch. Filed May 3, 1978. Patented July 10, 1979.

Patent 4,162,397. Fiber Optic Acoustic Sensor. Filed June 28, 1978. Patented July 24, 1979.

Patent 4,163,872. Secret Pulse Signaling System. Filed June 28, 1945. Patented Aug. 7, 1979.

Patent 4,164,023. Permutation Memories. Filed Sept. 22, 1977. Patented Aug. 7, 1979.

Patent 4,164,363. Single Mode Fiber-to-Channel Waveguide Through-Line Coupler. Filed Jan. 19, 1978. Patented Aug. 14, 1979.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
California	Los Angeles Public Library	(213) 626–7555 Ext. 274
	Sacramento: California State Library	(916) 322–4572
	Sunnyvale Patent Library*	(408) 736-0795
Colorado	Denver Public Library	(303) 573-5152 Ext. 223
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Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
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*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF FEBRUARY 23, 1980

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—R. FRIEDMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy: Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	5-9-77
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director. Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	10-3-78
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthodontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	4-2-79
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director. Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	5-30-79
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	2-12-79
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	8-31-78
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy; Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	11-16-78
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—N. ANSHER, Director. Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	1-16-79
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director. Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.	8-21-78
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	9-20-78
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	3-20-78
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—M. M. NEWMAN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	12-14-78
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	2-5-79
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—B. R. GRAY, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	1-15-79
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	10-18-78
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director. Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Misc. Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	10-2-78

Expiration of patents: The patents within the range of numbers indicated below expire during February 1980, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,076,195 to 3,079,605, inclusive
Plant Patents ..... Numbers 2,224 to 2,231, inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED APRIL 1, 1980

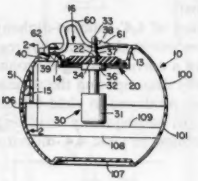
Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent and Trademark Office makes no assertion as to the novelty of the disclosed subject matter.

T993,001
FREE BODY AUTOMATIC LAUNDRY ADDITIVE DISPENSER

Robert F. McCarthy, Cincinnati, Ohio, assignor to The Proctor & Gamble Company, Cincinnati, Ohio

Filed Jul. 3, 1979, Ser. No. 54,514
Int. Cl.² D06F *39/02*
U.S. Cl. 68—17 R
2 Sheets Drawing. 15 Pages Specification



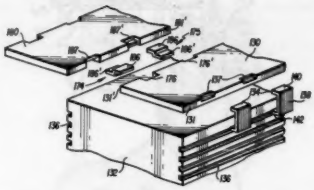
A dual-acting free body automatic dispenser for dispensing laundry additives into automatic washing machines. The dispenser comprises an assemblage of three major elements: a hollow, spherical container provided with an orifice; a resilient valve seated within the orifice and a rigid stempiece extending axially through the valve. The valve is positioned on the stempiece such that when seated a portion of the stempiece protrudes outwardly beyond the exterior of the container. A mass is attached to the interiorly extending end of the stempiece. The consumer operates the dispenser by filling it with laundry additive, manually seating the valve and placing the dispenser in the washing machine's basket. The dispenser is triggered during the first spin cycle. If the dispenser is oriented with the protruding portion of the stempiece in contact with the basket, centrifugal force causes the container to be forced outwardly relative to the stempiece, thereby unseating the valve. If the dispenser is oriented in any other position, centrifugal force acts on the mass attached to the stempiece and the moment of forces thereby effected unseats the valve. After the spin cycle, the dispenser falls from the wall and rinse water floods the dispenser, mixing with the additive.

T993,002
REFRACTORY SURFACES FOR ALUMINA REDUCTION CELL CATHODES AND METHODS FOR PROVIDING SUCH SURFACES

Howard I. Kaplan, Florence, Ala.; Jerry H. Bryce, Lawrenceburg, Tenn.; Thomas J. Johnston, Rogersville, Ala.; Jan M. Pottinger; Curtis J. McMinn, both of Florence, Ala.; Alton T. Tabereaux, Sheffield, Ala.; John T. Willett, and Nolan E. Richards, both of Florence, Ala., assignors to Reynolds Metals Company, Richmond, Va.

Filed May 29, 1979, Ser. No. 43,242
Int. Cl.² C25C *3/08, 7/02*
U.S. Cl. 204—243 R
3 Sheets Drawing. 51 Pages Specification

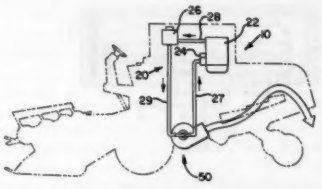
The disclosure pertains to alumina reduction cells which employ refractory materials to provide a molten-aluminum contacting surface for the cathode. Specifically, configurations and methods are described according to which refractory hard metal tiles are secured to a carbonaceous substrate to produce composites suitable for constructing a molten-aluminum contacting surface for the use stated. The tiles are wettable by molten aluminum and are inert chemically to the reduction cell electrolyte. Configurations for coupling and interlocking such tiles are also described. When the tiles are coupled or interlocked in the manner taught, it is possible to achieve a built-up refractory surface which remains chemically and mechanically stable in a reduction cell environment. The refractory hard metal materials used are included among the borides, nitrides and carbides of Group IV, V, and VI of the Periodic System, particularly compounds of titanium and zirconium, and especially titanium-diboride and titanium-diboride aluminum-nitride mixtures.



T993,003
FAN FOR COMBINE

C. Paul Kolthoff, Jr., Naperville, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed Jan. 17, 1979, Ser. No. 4,115
Int. Cl.² B07B *11/02*
U.S. Cl. 209—11
4 Sheets Drawing. 11 Pages Specification



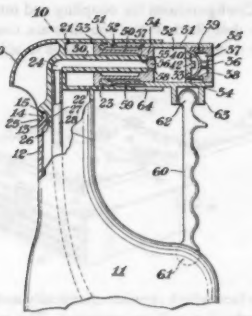
A cross flow blower unit for use in a grain cleaning system of a self-propelled combine harvester. The rotor of the blower unit doubles as a rotary heat exchanger for use in the engine coolant system and furnishes a heated air stream to the grain cleaning system for drying and removing moisture from the kernels of grain undergoing cleaning treatment therein.

T993,004

BIASING UNIT FOR DISPENSING PUMP

Floyd R. French, 700 Shallowford, Manchester, Mo. 63011

Filed Jun. 11, 1979, Ser. No. 47,403
Int. Cl.[2] B05B *11/00*
U.S. Cl. 222—321
2 Sheets Drawing. 12 Pages Specification



An elastomeric biasing unit for a manually operated dispensing pump of the type including a hollow, stationary piston and reciprocable piston cylinder coaxially disposed about the piston and cooperating therewith to define a variable volume pump chamber. The biasing unit, which urges the piston cylinder outward to a position of maximum pump chamber volume, has an open end in operative association with the piston cylinder and a generally closed end, providing a component of the inlet check valve, in operative association with the piston.

T993,005

PREPARATION OF AROMATIC FLUORO COMPOUNDS

Philip A. Staniland, Tewin Wood, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Mar. 19, 1979, Ser. No. 22,597
Claims priority, application United Kingdom, Mar. 31, 1978, 12664/78; Aug. 10, 1978, 32842/78
Int. Cl.[2] C07C *45/00*
U.S. Cl. 260—591
No Drawing. 9 Pages Specification

The present invention relates to a process for the preparation of 4,4'-difluorobenzophenone. 4,4-difluorobenzophenone may be prepared by diazotization of 4,4'-diamino-diphenylmethane in anhydrous or concentrated aqueous hydrogen fluoride, decomposition of the diazonium fluoride thus produced to yield 4,4'-difluoro-diphenylmethane and oxidation of 4,4'-difluoro-diphenylmethane to yield 4,4'-difluorobenzophonone.

Thus, according to the present invention, there is provided a process for the preparation of 4,4'-difluorobenzophenone which comprises the following steps:

(1) diazotization of 4,4'-diamino-diphenylmethane in anhydrous or concentrated aqueous hydrogen fluoride to yield a solution of a corresponding diazonium fluoride; and

(2) (i) thermally decomposing the diazonium fluoride in the solution thus produced to yield 4,4'-difluoro-diphenylmethane and (ii) subsequently oxidizing the 4,4'-difluoro-diphenylmethane to yield 4,4'-difluorobenzophenone.

T993,006

ADHESIVE COMPOSITION

Richard L. McConnell, 421 Manderley Rd., Kingsport, Tenn. 37660; Doyle A. Weemes, 1603 Moore Ave., Greeneville, Tenn. 37743, and Frederick D. Petke, 1426 Watauga St., Kingsport, Tenn. 37660

Filed Feb. 21, 1979, Ser. No. 13,111
Int. Cl.[2] C08F *283/04;* C08G *69/48;* C08L *67/00*
U.S. Cl. 525—425
No Drawing. 17 Pages Specification

Composition especially useful as an interlining adhesive comprising a physical blend of a copolyester powder and a polyamide powder. The polyester is derived from terephthalic acid and 1,4-butanediol in various combinations with isophthalic acid and/or 1,6-hexanediol, has a melting point of between about 90° and about 140° C. and a heat of fusion of from about 0.1 to about 10 calories per gram. The polyamide has a melting point of between about 50° C. and about 200° C.

REISSUES

APRIL 1, 1980

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

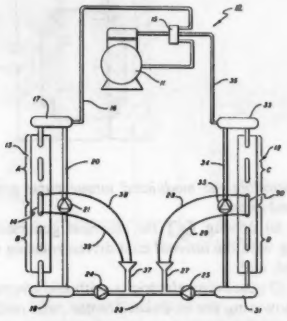
Re. 30,242
HEAT PUMP SYSTEM

James J. del Toro, North Syracuse, and Rudy C. Bussjager, Syracuse, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Original No. 4,057,975, dated Nov. 15, 1977, Ser. No. 720,721, Sep. 7, 1976. Application for reissue Nov. 15, 1978, Ser. No. 960,996

Int. Cl.[2] F25B *13/00, 39/02;* F28F *27/02*

U.S. Cl. 62—324 2 Claims



7. A heat pump system having a compressor, an indoor coil, an outdoor coil, a reversing valve for delivering refrigerant discharged from the compressor to the indoor coil during heating operations and to the outdoor coil during cooling operations, the method of processing refrigerant through the system including the steps of:

separating the indoor and outdoor coils into a plurality of heat transfer zones, each zone having a number of flow circuits passing through the coil associated therewith;

routing the refrigerant delivered from the compressor to the outdoor coil during the cooling operation so that refrigerant flows through each of the heat transfer zones in a series progression;

delivering the refrigerant discharged from the outdoor coil to each of the heat transfer zones of the indoor coil simultaneously so that the refrigerant flows through the zones in a parallel flow;

returning the refrigerant from the indoor coil to the compressor to complete the cycle;

reversing the flow geometry through the indoor and outdoor coils in response to a change in the systems operation whereby refrigerant flow in series through the zones of the indoor coil in parallel through the zones of the outdoor coil; and

arranging the number of circuits in each heat transfer zone so that the number decreases in respect to the direction of series flow through the exchanger.

Re. 30,243
PADLOCK CLOSURE

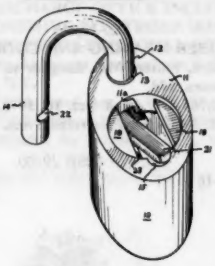
Roy N. Oliver, Salem, Va., assignor to Medeco Security Locks, Inc., Salem, Va.

Original No. 4,063,435, dated Dec. 20, 1977, Ser. No. 728,787, Oct. 1, 1976. Application for reissue Sep. 7, 1978, Ser. No. 940,240

Int. Cl.[2] E05B *27/24*

U.S. Cl. 70—38 A 1 Claim

1. In a padlock having a U-shaped shackle including a confined leg and a shorter non-confined leg protruding respectively from sockets in the top of the padlock, a body enclosing a detachably fixed lock cylinder removable through an opening in the top of the padlock, the top opening being of circular shape having a diameter less than the minimum distance between the shackle legs merging into an approximately semi-circular shape having a diameter just larger than that of the shorter shackle leg, the body portion including fixed bayonet coupling portion therein, a closure comprising a circular rotatable member for the opening having on its underside a bayonet



coupling portion which cooperates with the bayonet coupling portion of the body and, the closure member on rotation sealing and closing the opening except for the shorter shackle leg opening portion thereof, so that when the padlock is locked the closure member is locked by the shorter shackle leg, and when the padlock is unlocked the shorter shackle leg only when removed allows the closure member to be removed for removal of the detachably fixed lock cylinder.

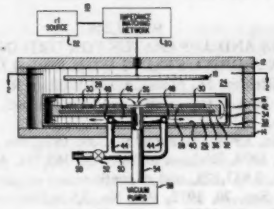
Re. 30,244
RADIAL FLOW REACTOR INCLUDING GLOW DISCHARGE LIMITTING SHIELD

Frank B. Alexander, Jr., Paterson; Cesar D. Capio, Fords, both of N.J.; Victor E. Hauser, Jr., Palmerton, Pa.; Hyman J. Levinstein; Cyril J. Mogab, both of Berkeley Heights, N.J.; Ashok K. Sinha, New Providence, N.J., and Richard S. Wagner, Bernardsville, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Original No. 4,033,287, dated Jul. 5, 1977, Ser. No. 651,555, Jan. 22, 1976. Application for reissue Sep. 28, 1978, Ser. No. 946,843

Int. Cl.[2] C23C *13/08*

U.S. Cl. 118—723 9 Claims



1. [Coating apparatus] *Apparatus* comprising:

an evacuable chamber;

a member located in said chamber having a support region adapted to support at least one object and a central region which defines an aperture therethrough;

means for facilitating a radio frequency discharge within the

chamber adjacent the object to form a [flow] *glow* discharge plasma from reactant gases introduced into the chamber;

exhaust means in communication with the centrally disposed aperture in the member; and

[coating] gas-vapor feed means located adjacent the support region of the member such as that gas-vapor feed is induced to flow across the support region of the member in a radial flow and out through the exhaust means, the [coating] gas-vapor feed means being adapted to substantially inhibit any glow plasma discharge reaction from occurring until reactant gases introduced into [he] *the* apparatus through the [coating] gas-vapor *feed* means reach the support region of the member.

Re. 30,245

TWO-RISER HEATING AND COOLING UNIT

James J. Whalen, Fulton, Md., assignor to The Whalen Company, Baltimore, Md.

Original No. 3,765,476, dated Oct. 16, 1973, Ser. No. 248,804, May 1, 1972. Application for reissue Sep. 19, 1977, Ser. No. 834,838

Int. Cl.[2] **F25B** *29/00*

U.S. Cl. 165—16 **20 Claims**

1. An air conditioning system for installation in a building, said system comprising an elongated housing, means dividing said housing into two compartments, an air inlet associated with one compartment and an air outlet associated with the other compartment, two vertically extending risers disposed in said housing and extending the length of said housing for direct connection to the risers of corresponding units located on adjacent floors of said building to form a continuous flow circuit for a heat exchange medium, one of said compartments having means therein for supporting a refrigerant cycling unit, means in said one compartment for connecting said risers to said refrigerant cycling unit in a manner to place said heat exchange medium in a heat exchange relation to said refrigerant, and means in said housing for circulating ambient air into said inlet, through said compartments and out from said outlet.

Re. 30,246

METHODS AND APPARATUS FOR DRIVING A MEANS IN A DRILL STRING WHILE DRILLING

Albert P. Richter, Jr., Houston, and William R. McEvers, Jr., Bellaire, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Original No. 3,908,770, dated Sep. 30, 1975, Ser. No. 469,147, May 13, 1974. Division of Ser. No. 363,784, May 24, 1973, Pat. No. 3,837,223, and a continuation-in-part of Ser. No. 290,676, Sep. 20, 1972, Pat. No. 3,820,389. Application for reissue Sep. 26, 1977, Ser. No. 836,328

Int. Cl.[2] **E21C** *7/08;* **E21B** *3/12*

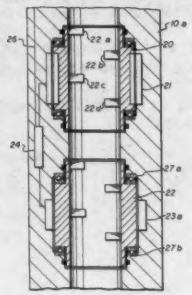
U.S. Cl. 175—65 **9 Claims**

1. A method for driving *an electrical* generator in the lower end of a drill string while drilling for powering a control system in the drill string *for controlling a torque pulse generator for generating modulated torque pulses in the drill string* comprising the steps of,

(a) circulating drilling mud internally of the drill string upper end to the drill string lower end,

(b) flowing the drilling mud internally of a vaned turbine wheel in the drill string.

[b] *(c)* rotating [a] *the* vaned turbine wheel in the drill string by action of the downwardly circulating drilling mud [and] *internally of the vaned turbine wheel,*



(d) controlling the modulated torque pulse generator with a control system,

[(c)] *(e)* driving [a] *the electrical* generator in the drill string with the *internal* mud driven rotating vaned turbine wheel, and

[(d)] *(f)* generating electricity with said *electrical* generator for powering the *modulated torque pulse generator* control system *while drilling.*

Re. 30,247

MEANS FOR SUPPORTING FUEL ELEMENTS IN A NUCLEAR REACTOR

Harry N. Andrews, Murrysville, and Herbert W. Keller, Monroeville, both of Pa., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Reissued No. Re. 28,079, dated Jul. 23, 1974, Ser. No. 153,203, Jun. 15, 1971.

Original No. 3,379,617, dated Apr. 23, 1968, Ser. No. 458,634, May 25, 1965. Application for reissue Jun. 25, 1975, Ser. No. 590,163

Int. Cl.[2] **G21C** *3/30*

U.S. Cl. 176—78 **21 Claims**

5. A grid structure for a nuclear reactor fuel assembly comprising a plurality of connecting members forming [at least one] longitudinally extending [opening] *peripheral and inner fuel element openings* through *each of* which *openings* at least one nuclear fuel element extends, said connecting members forming wall means surrounding [said] *each peripheral and inner fuel element* opening, a pair of rigid projections **longitudinally spaced from one another** extending from a portion of said wall means into [said] *each peripheral and inner* opening for rigidly engaging [said] *each* fuel element, *respectively, yet permit individual longitudinal slippage thereof,* and resilient means **formed integrally on and from said wall means and** positioned in [said] *each peripheral and inner* opening in opposed relationship with said projections and located to engage said fuel element to bias the latter into engagement with said rigid projections, *respectively.*

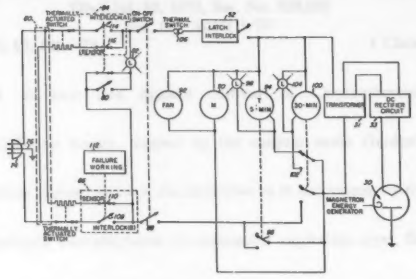
Re. 30,248
SAFETY INTERLOCK SYSTEM FOR MICROWAVE OVENS

Rex E. Fritts, Cedar Rapids, Iowa, assignor to Amana Refrigeration, Inc., Amana, Iowa

Original No. 3,816,688, dated Jun. 11, 1974, Ser. No. 337,256, Mar. 1, 1973. Continuation of Ser. No. 771,496, Feb. 24, 1977, abandoned, which is a continuation of Ser. No. 674,796, Apr. 8, 1975, abandoned, which is a continuation of Ser. No. 602,348, Aug. 1, 1975, abandoned, which is a continuation of Ser. No. 499,889, Aug. 3, 1974, abandoned, which is a division of Ser. No. 240,626, Apr. 3, 1972, Pat. No. 3,766,437. Application for reissue Apr. 26, 1978, Ser. No. 899,911

Int. Cl.[2] H05B *9/06*; H02H *5/04*

U.S. Cl. 219—10.55 B **5 Claims**



1. Microwave oven apparatus comprising:
a conductive enclosure having an access opening;
a door closing said access opening;
a microwave energy generator;
an electrical circuit for energizing said generator including safety interlock switch means;
said circuit including a voltage source *and having said interlock switch means directly coupled to one side of said voltage source through thermally actuated circuit deenergizing means responsive to heat from resistive heating means;*
sensor *switch* means *coupled to the other side of said voltage source* for detecting the malfunction of said interlock switch [with] *means,* said interlock switch means *being* normally closed and said sensor *switch* means *being* normally open when said apparatus is operative; [and]
said interlock switch means and said sensor switch means being mechanically actuated by movement of said door; and
said circuit deenergizing means [operatively associated] *being coupled in series* with *said resistive heating means through* said sensor *switch* means *across said voltage source* [to deenergize] *to disable* said *microwave* generator [upon detection of an unsafe operating condition with both said] *when said* interlock switch [and sensor means in closed positions] *means fails to open upon opening of said door.*

3. Microwave oven apparatus comprising:
a conductive enclosure having an access opening;
a door closing said access opening;
a microwave energy generator having its output coupled to the interior of said enclosure;
circuit means comprising interlock switch means mechanically actuated by movement of said door and connected in said circuit means between one terminal of a voltage source and one terminal of said load;
sensor switch means mechanically actuated by movement of said door and connected in series with said interlock switch means, resistive heating means and said voltage source for detecting a malfunction of said interlock switch means;
said interlock switch means being normally closed and said sensor switch means being normally open when said apparatus is operating; and
thermally actuated switch means, which is connected in series with said interlock switch means, said voltage source and a transformer supplying said microwave generator during operation of said apparatus and which is connected in series with said sensor means, said resistive heating means, said interlock switch means and said voltage source when said interlock switch means fails to open upon opening of said door to thermally actuate said thermally actuated switch means and thereby disabling said microwave generator.

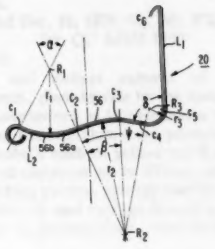
Re. 30,249
ELECTRON DISCHARGE DEVICE INCLUDING AN ELECTRON EMISSIVE ELECTRODE HAVING AN UNDULATING CROSS-SECTIONAL CONTOUR

Richard D. Faulkner, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Original No. 3,875,441, dated Apr. 1, 1975, Ser. No. 420,325, Nov. 29, 1973. Continuation of Ser. No. 711,845, Aug. 5, 1976, abandoned. Application for reissue May 1, 1978, Ser. No. 901,975

Int. Cl.[2] H01J *43/10, 39/06*

U.S. Cl. 313—104 **6 Claims**



1. An electron discharge device comprising:
a. a series of at least two electron optically aligned electrodes;
b. means for emitting electrons from preceding ones of said series of electrodes comprising an electron emissive surface region on each preceding one of said series of electrodes;
c. means for accelerating electrons emitted from each electron emissive surface region to impinge upon a succeeding one of said electrodes; said emitted electrons being accelerated as a stream of electrons, from a first electrode of said series, to impinge upon succeeding ones of said series in non-repeating sequence;
d. one of said electrodes comprising an anode for ultimately collecting said electron stream;
e. wherein said electron emissive surface region of [the first] *at least one other* of said series of electrodes includes, *across its width* a cross-sectional contour substantially characterized by an undulating line of curvature superimposed thereon which includes a plurality of interconnected arcuate regions, *said undulating line of curvature providing substantially uniform collection by a succeeding electrode of the electron stream emitted from the undulating surface region, substantially independent of the respective point of origin of various ones of the electrons along the cross-sectional contour*; and
f. means whereby said [first] *other* electrode may be excited to a substantially single electrostatic field potential across the entire electron emissive surface portion characterized by said undulating line of curvature.

PLANT PATENTS

GRANTED APRIL 1, 1980

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,515

CHRYSANTHEMUM PLANT

Camilo Herrera V., and Reinalda Saavedra, both of Bogota, Columbia, assignors to Jardines de Los Andes Ltda., Bogata, Columbia

Filed Jul. 31, 1978, Ser. No. 929,669
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—79 **1 Claim**

1. A new and distinct cultivar of *Chrysanthemum morifolium;* Ramat., known by the cultivar name Garden's Bronze and particularly characterized as to uniqueness by the combined characteristics of decorative capitulum type; flat capitulum form; golden bronze ray floret color; diameter across face of capitulum from 90 to 115 mm. at maturity; uniform ten week response to photoperiodic short-day control; tall plant height; and semi-upright branching pattern.

4,516

ACANTHUS FAMILY

Hermann H. Engelmann, P.O. Box 1227, Apopka, Fla. 32703

Filed Nov. 27, 1978, Ser. No. 963,835
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—88 **1 Claim**

1. The new and distinct variety of the Acanthus family substantially as herein shown and described.

4,517

CHRYSANTHEMUM PLANT

Grace H. Mack, 108 Wahackme Rd., New Canaan, Conn. 06840; Walter H. Jessel, Jr., Grantsville, W. Va., and William E. Duffett, Salinas, Calif., assignors to Grace H. Mack, New Canaan, Conn.

Filed Dec. 21, 1978, Ser. No. 972,160
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—75 **1 Claim**

1. A new and distinct cultivar of *Chrysanthemum morifolium,* Ramat., plant known by the name Westpoint and particularly characterized as to uniqueness by the combined characteristics of flat capitulum form, pompon capitulum type (commercial double), medium yellow ray floret color, diameter across face of capitulum up to 40 mm., short plant height, spreading branching pattern, average natural season flowering date of September 28, and average flowering response period of seven weeks in photoperiodic controlled short day programs.

PATENTS

GRANTED APR. 1, 1980

ERRATA

For CLASS	See PATENT NO.
029–421 R	4,195,390
002–158	4,195,405
433–175	4,195,409
356–028	4,195,425
368–090	4,195,471
405–257	4,195,487
371–020	4,195,769
371–021	4,195,770
126–425	4,195,775
238–010 F	4,195,776
273–088	4,195,938
430–070	4,195,990
430–055	4,195,991
430–225	4,195,992
430–225	4,195,993
430–224	4,195,994
430–142	4,195,995
430–380	4,195,996
430–286	4,195,997
430–156	4,195,998
430–507	4,195,999
430–207	4,196,000
430–617	4,196,002
430–193	4,196,003
430–007	4,196,010
424–177	4,196,123
548–141	4,196,125
548–214	4,196,126
556–479	4,196,139
424–278	4,196,251
370–048	4,196,311
198–781	4,196,312
370–102	4,196,315
455–611	4,196,346
455–603	4,196,347
455–117	4,196,392
340–600	4,196,393
455–289	4,196,394
455–154	4,196,395
356–256	4,196,450
362–010	4,196,458
362–066	4,196,459
362–231	4,196,460
362–259	4,196,461

PATENTS

GRANTED APR. 1, 1980

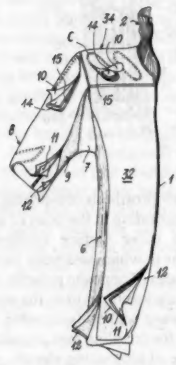
ERRATA

PATENTS

GRANTED APRIL 1, 1980

GENERAL AND MECHANICAL

4,195,362
SHOCK RESISTANT JACKET
Pierluigi Rolando, Vicolungoa, Italy, assignor to Maglificio Biellese Fratelli Fila S.p.A., Italy
Filed Jun. 14, 1978, Ser. No. 915,409
Claims priority, application Italy, Nov. 15, 1977, 22720/77[U]
Int. Cl.[2] A41D *13/00, 1/02*
U.S. Cl. 2—2 **13 Claims**



1. An insulated protective jacket, such as of the ski jacket type, comprising:

a body forming portion defined by inner and outer fabric layers at least one of which is substantially windproof and an intermediate layer disposed between said inner and outer layers formed of a thermally insulating material, said body forming portion including a shoulder forming portion at an upper region thereof;

a pair of sleeve forming portions attached to said body forming portion defined by inner and outer fabric layers at least one of which is substantially windproof and an intermediate layer disposed between said inner and outer layers formed of a thermally insulating material; and

a plurality of protective plate assemblies provided only within each of said shoulder and sleeve forming portions between one of said outer and inner fabric layers and said intermediate insulating layer, each of said plate assemblies including a substantially rigid plate membe and a substantially resilient support member; said plate member resting on an associated support member which is interposed between said plate member and said inner fabric layer.

4,195,363
PERIMETER DRAFT WELDING HOOD
Bernard T. Jenson, 34762 Powder River Pl., Fremont, Calif. 94536
Filed Dec. 30, 1977, Ser. No. 865,994
Int. Cl.[2] A61F *9/06*
U.S. Cl. 2—8 **9 Claims**

1. A device for preventing the migration of smoke and noxious fumes beneath a protective face shield worn by a worker, said device comprising a tube-like manifold secured to the exterior of said face shield adjacent the lower edge of said face shield, said manifold including a plurality of spaced vent holes positioned in said manifold so as to direct a curtain of air downwardly from said manifold to prevent migration of the smoke and fumes and said curtain of air under the lower edge of said face shield, said device further including means for supplying a flow of pressurized air to said manifold to produce said downwardly directed air curtain.

4,195,364
GARMENT FOR USE IN VIGOROUS PHYSICAL ACTIVITIES
Anders G. Bengtsson, Boras, and Kjell Eng, Mullsjo, both of Sweden, assignors to AB Eiser, Boras, Sweden
Filed Nov. 20, 1978, Ser. No. 962,001
Claims priority, application Sweden, Nov. 30, 1977, 7713556
Int. Cl.[2] A41D *13/00*
U.S. Cl. 2—81 **6 Claims**

1. An improved garment intended to be worn closest to the skin during vigorous physical activities in warm environments, said garment comprising a comparatively open warp knit fabric base and vertically extending cords bound into said base, the improvement comprising

the base of said warp knit fabric being a mesh fabric, said fabric comprising thermo-settable synthetic fibres, said fabric set to retain its shape so as to force said cords to be displaced in parallel laterally when the wearer of the garment moves, said cords being in contact with the skin, said fabric arranged, on account of its rigidity, to provide

an improved pumping effect upon relative movements between said garment and the wearer's body, said garment

having a width sufficient to ensure its unimpeded movement over the skin surface of the wearer.

4,195,365

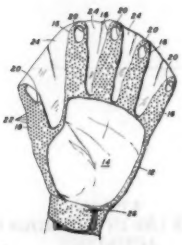
GLOVE

Glen C. Eyman, deceased, late of Palastine, Tex., and by Dollie H. M. Eyman, administratrix, 1217 N. Link, Palastine, Tex. 75801

Continuation-in-part of Ser. No. 763,353, Jan. 28, 1978. This application Aug. 21, 1978, Ser. No. 935,467

Int. Cl.[2] A41D *19/00*; A63B *31/02*

U.S. Cl. 2—161 A **7 Claims**



1. A glove, comprising a glove body having front and back portions and a plurality of hollow tubular finger securing stalls and a thumb stall, web means communicating between said finger stalls and said thumb stall, each of said finger stalls and said thumb stall defining a first aperture adjacent the distal end of said stall exposing at least a portion of said finger, said portion of said finger being intermediate the palm of the hand and the distal most end of said finger, said glove body defining a plurality of randomly disposed second apertures, said first aperture being defined by marginal edges in said each of said finger stalls and said thumb stall, a portion of said marginal edges immediately adjacent said first aperture defining a sharpened edge, said sharpened edge residing in the interior surface of said edge of said finger stalls and said thumb stall, whereby said first aperture maximizes the tactile sensation of said portion of said finger.

4,195,366

WHITLOCKITE CERAMIC

Michael Jarcho, and Ronald L. Salsbury, both of Schodack, N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Filed Dec. 23, 1977, Ser. No. 863,721

Int. Cl.[2] A61F *1/24*; A61K *5/01*; C09K *3/00*; C04B *35/00*

U.S. Cl. 3—1.9 **21 Claims**

1. A translucent, isotropic, substantially pore-free polycrystalline ceramic consisting essentially of whitlockite containing within the crystal lattice thereof about 0.1 to 2.2 percent by weight sulfate ion and characterized by an average crystallite size in the approximate range 0.3 to 3 microns and a density greater than about 98 percent of the theoretical density of β-whitlockite.

4,195,367

LONG-TERM ENDOPROSTHESIS

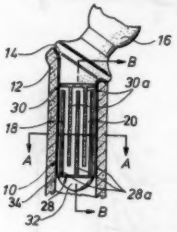
Werner Kraus, 41 Augustenstrasse, Munich, Fed. Rep. of Germany

Filed Mar. 18, 1977, Ser. No. 779,127

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1976, 2611744

Int. Cl.[2] A61F *1/24*

U.S. Cl. 3—1.91 **5 Claims**



1. A long term endoprosthesis comprising, in combination, a body member for implanting in the bone of a person, said body member having an outer surface configured for intimate contact with the bone in which said body member is implanted, a plurality of electrodes of opposite polarity disposed in closely spaced alternating relationship within the major portion of the area of contact between said body member outer surface and the bone and means for coupling said plurality of electrodes to an associated source of alternating electric power whereby a low alternating voltage is produced between said electrodes for enhancing the growth of new bone in said area of contact.

4,195,368

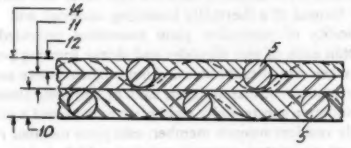
SURGICAL REPAIR PAD FOR DISEASE-DAMAGED JOINTS AND METHOD OF IMPLANTING THE SAME

Mihai D. Patrichi, Los Angeles, Calif., assignor to Networks Electronic Corp., Chatsworth, Calif.

Continuation-in-part of Ser. No. 868,196, Jan. 9, 1978. This application May 30, 1978, Ser. No. 910,201

Int. Cl.[2] A61F *1/24*

U.S. Cl. 3—1.91 **11 Claims**



9. A repair pad of meniscus shape for surgical insertion

between the ball and socket of a disease-damaged joint of a living being, comprising:

a sheet of fabric material;

a body of binder material saturating said fabric material, at least a portion of the thickness of said body including a finely divided hard metal powder dispersed therein;

said saturated material being finished so as to have a highly glossy surface, a uniform specified thickness, and enhances strength.

4,195,369

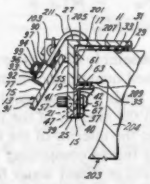
PORTABLE BIDET ATTACHMENT

Alvin B. Lesick, 2411 Deloraine Trail, Maitland, Fla. 32751

Continuation of Ser. No. 780,293, Mar. 23, 1977, abandoned. This application Aug. 10, 1978, Ser. No. 932,479

Int. Cl.[2] A47K *3/22*; B05B *15/06*

U.S. Cl. 4—7 **15 Claims**



1. A bidet attachment for use with a toilet having a bowl with a rim defining the upper edge of the mouth of the bowl, the rim including an upper horizontal surface, a lower horizontal surface, the lower horizontal surface being disposed generally directly beneath said upper horizontal surface, and a vertical surface extending between the upper and lower horizontal surfaces and facing generally toward the center of the mouth of the bowl, the attachment comprising:

a first clamp member having first clamping means for engaging a portion of the upper horizontal surface and a first face plate attached to said first clamping means, said first face plate having a planar outer surface and an opposite planar inner surface and extending downwardly from said first clamping means such that said outer surface faces generally toward the center of the mouth of the bowl and the lowermost portion of said first face plate extends below the lower horizontal surface when said first clamping means engages said upper horizontal surface;

a second clamp member having second clamping means for engaging a portion of the lower horizontal surface and a second face plate attached to said second clamping means, said second face plate having a planar outer surface and extending downwardly from said second clamping means such that said planar outer surface of said second face plate juxtaposes the lowermost portion of said inner face of said first face plate when said second clamping means engages said lower horizontal surface;

connecting means for adjustably connecting said first clamp member to said second clamp member to form a clamp, said connecting means extending between said second face plate and the lowermost portion of said first face plate and extending outwardly from said outer surface of said first face plate generally toward the center of the mouth of the bowl;

a nozzle assembly having an inlet port, an outlet port, and a passageway interconnecting said inlet port and said outlet port; and

attachment means for attaching said nozzle assembly to said first face plate outer surface wherein said nozzle assembly is located at the level of or below the upper horizontal surface of said first clamping means and extends outwardly from said outer surface of said first face plate generally toward the center of the mouth of the bowl, with said outlet port of said nozzle assembly being directed generally away from said outer surface of said first face plate.

4,195,370

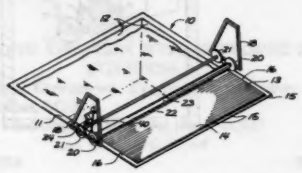
APPARATUS FOR REELING AND UNREELING POOL COVERS

Joe A. Budd, Spokane, Wash., assignor to Budd-Ke Enterprises, Inc., Spokane, Wash.

Filed Sep. 12, 1978, Ser. No. 941,548

Int. Cl.[2] E04H *3/16, 3/18*

U.S. Cl. 4—172.14 **6 Claims**



1. An apparatus for reeling and unreeling a flexible swimming pool cover, comprising:

a pair of carriage frames;

a pair of wheels on each frame, each pair of wheels including a front wheel and a rear wheel mounted to the frame, the respective front and real wheels of the frames being coaxial and rotatably mounted to the frames about parallel transverse axes;

an elongated drum extending between the carriage frames and rotatably mounted thereto for coaxial rotation about the axis of the front wheels;

said front wheels being rotatable independently of said drum;

a stabilizer tube extending between the carriage frames, said tube being operably fixed to the rear wheels for rotation in unison with the rear wheels;

drive means operatively associated with the drum for rotating the drum about its axis independently of the front wheels;

said drum being adapted to be connected to one end of a swimming pool cover; and

brake means engaging one of the wheels on each carriage frame for causing the wheel to continuously resist rotation about its axis.

4,195,371

POOL CLEANING APPARATUS

Raymon L. Goodin, 2227 W. Overton, Tucson, Ariz. 85704

Continuation-in-part of Ser. No. 773,681, Mar. 2, 1977, abandoned. This application Sep. 5, 1978, Ser. No. 939,175

Int. Cl.[2] E04H *3/16*

U.S. Cl. 4—172.15 **3 Claims**

1. A pool cleaning apparatus comprising:

nozzle means mounted in the surface of a pool for ejecting recirculating pool water therethrough,

said nozzle means comprising a rotating head having an outlet port through which a jet stream of recirculating pool water is ejected,

said nozzle means comprising a means for accumulating air from said recirculating pool water in said nozzle means and periodically releasing accumulated air through said outlet port,

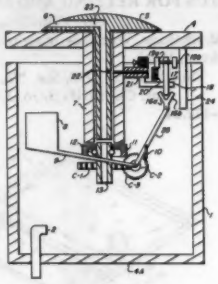
tubular means for connecting said nozzle means to the recirculating pool water,

air injection means for accumulating air at a given point in the recirculating pool water and periodically ejecting this air into water being directed to said nozzle means through said tubular means,

said air injection means for accumulating air comprising a

first buoyant means reciprocating under pressure of the accumulating air to sequentially inject air into the recirculating water moving in the tubular means,

a second buoyant means for periodically rotating said head



upon a predetermined accumulation of the air in said nozzle means, and

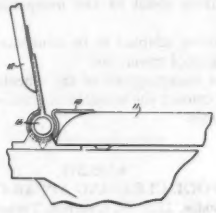
gear means interconnecting said second buoyant means and said head for rotating said head upon predetermined movement of said second buoyant means.

4,195,372

AUTOMATIC SEAT RETURN SPRING FOR RELATIVELY PIVOTED TOILET SEAT AND COVER ASSEMBLIES

Minnie Farina, Hialeah, Fla., assignor to Nancy Schroeder and Emilio Joseph Farina, both of Miami, Fla.

Filed Jun. 1, 1976, Ser. No. 691,852
Int. Cl.[2] A47K 3/10; A47C 7/62
U.S. Cl. 4—234 **2 Claims**



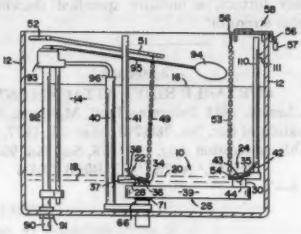
1. An automatic seat return spring mechanism comprising, a toilet seat and seat cover, relative hinging means for said seat and cover comprising a pair of spaced hinge members having a common pintle extending therebetween, a tempered sheet metal leaf spring integrally formed with a transverse arcuate portion partially surrounding the hinge pintle at the outside thereof, said arcuate portion merging with first and second laterally-outwardly-extending abutment leaf portions abutting, respectively, a rear portion at the inside of the seat and a rear portion at the inside of the cover, whereby the seat will be resiliently constrained in the downward position against the reactive force imposed by the cover, said transverse arcuate portion being of substantially tubular configuration extending just short of a full circle, said first abutment leaf portion being reversely bent to define an acute angle with respect to the outside of said arcuately formed portion, and said second abutment leaf portion being outwardly bent to define an obtuse angle with respect to the outside of said arcuately formed portion.

4,195,373

DOUBLE FLUSH VALVE ASSEMBLY

James R. Claywell, 919 - 38th St. West, Bradenton, Fla. 33505

Filed Aug. 10, 1978, Ser. No. 932,555
Int. Cl.[2] E03D 1/14, 1/34
U.S. Cl. 4—326 **10 Claims**



1. A flush valve assembly of the type commonly designed to release predetermined quantities of water from a flush tank to a toilet bowl, said flush valve assembly comprising: housing means grounded on the interior of the flush tank in fluid communication between the interior of the flush tank and the tank outlet, said housing means comprising conduit means dimensioned and configured to direct water from the interior of the tank to the tank outlet, said conduit means comprising at least a first and second conduit inlet and at least a single conduit outlet, said conduit outlet interconnected to the tank outlet, said first and second conduit inlets disposed at different depths within the interior of the flush tank, a first and second valve means connected in fluid flow regulating position to said first and second conduit inlets respectively, mounting means disposed within the tank inlet and connected to said housing means so as to position the conduit means in liquid channelling relation between the tank interior and the tank outlet; the primary flush handle mounted on the flush tank and disposed at least partially on the exterior thereof and interconnected to said first valve means for activation thereof, and auxiliary flush handle mounted on the flush tank and at least partially on the exterior thereof and interconnected to said second valve means for activation thereof, the primary flush handle and said auxiliary flush handle disposed in spaced apart, separated relation to one another on independent portions of the flush tank, whereby different quantities of water are released from the flush tank by activation of different ones of the primary and said auxiliary flush handle.

4,195,374

PLUMBING FIXTURE OVERFLOW LIMITER

Earl L. Morris, Whittier; Walter V. Hafner, Industry, and Theodore J. Sally, Whittier, all of Calif., assignors to Acorn Engineering Co., Industry, Calif.

Filed May 14, 1979, Ser. No. 38,449
Int. Cl.[2] E03D 11/02, 11/18
U.S. Cl. 4—427 **10 Claims**

1. A plumbing fixture with a toilet bowl having a P-trap with means for inhibiting overflow from the toilet bowl when an obstruction exists in the waste outlet thereof, comprising:

(a) a toilet bowl having a flushing rim thereabout adapted to be coupled to a water supply pipe;

(b) an electrically controlled flushing valve for controlling the flow of water in the water supply pipe;

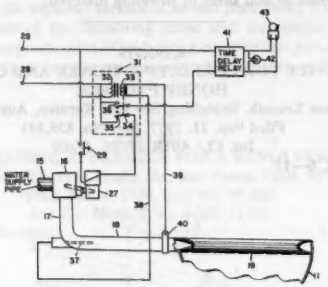
(c) a source of electricity for operating the flushing valve;

(d) a switch for controlling the flow of electricity to the flushing valve;

(e) a blow-out jet pipe coupled to the P-trap and adapted to be coupled to the water supply pipe;

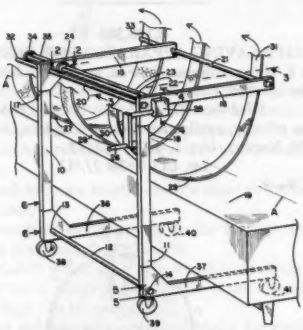
(f) a hollow adapter having at least four openings thereinto wherein one opening is coupled to the water supply pipe, one opening is coupled to the blow-out jet pipe, and one

opening is coupled to the flushing rim so that when water resides therein water also resides in the adapter via the opening coupled to the flushing rim, said adapter having a weir therein dividing the openings coupled to the water supply pipe and the blow-out jet pipe from the other openings therein; and



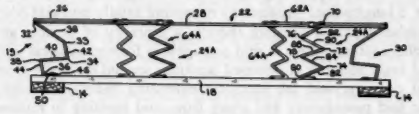
(g) an electrical probe mounted in the remaining opening in the adapter thereby disposing it below the top of said weir, the electrical probe being operably connected to a detection circuit, the detection circuit operating to prevent the electrical actuation of the flushing valve when water is in the flushing rim and in the adapter about the probe, and completes the circuit between the probe and electrical ground.

4,195,375
PATIENT LIFTING DEVICE
Korchinski N. Paul, 121 N. 3rd St., Alhambra, Calif. 91801
Filed Nov. 6, 1978, Ser. No. 958,108
Int. Cl.[2] A47B *83/04*
U.S. Cl. 5—81 R **9 Claims**



1. A patient lifting device comprising, in combination:
(a) a frame having at least two spaced members supported at a given level above a bed upon which a patient is lying, said members running in horizontal directions parallel to each other and to said patient;
(b) at least one flexible separable strap for supporting the patient, said strap having opposite portions extending up along opposite sides of the patient for passing over said members respectively; and
(c) holding and turning means mounted on said frame, said holding and turning means including rod means; a rotatable member secured in fixed spaced relationship adjacent to a first end of said rod means, said rotatable member being mounted for rotation in said frame; an end cap securing in fixed spaced relationship the opposite end of said rod means, said end cap being rotatably mounted in another portion of said frames so that said rod means extends parallel to said two spaced parallel members, the opposite portions of said strap passing over said members being receivable in said rod means; and means for rotating said rotatable member to thereby rotate said rod means in such a manner as to coil said opposite portions simultaneously about said rod means whereby equal lifting forces are provided on said opposite portions of said strap so that the patient is lifted evenly without any forces being generated tending to roll the patient.

4,195,376
BOX SPRING ASSEMBLY WITH IMPROVED END STIFFNESS
John P. Kitchen, Georgetown, Ky., assignor to Hoover Universal, Inc., Saline, Mich.
Filed Sep. 13, 1978, Ser. No. 941,927
Int. Cl.[2] A47C *23/04*
U.S. Cl. 5—255 **2 Claims**



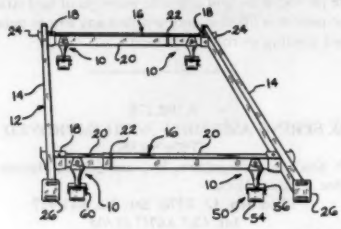
1. A box spring assembly having front and rear ends and comprising a frame, a plurality of main springs extending transversely of said frame, a plurality of main springs extending longitudinally of said frame, each of said main springs having a main body portion and depending end portions, said end portions being mounted on said frame to resiliently support said main body portion in spaced relation above said frame, said main body portions cooperating to form a load supporting deck having a plurality of rectangular spaces, and internal support springs connected to said main springs between said main spring body portions, each of said internal support springs having a main body portion extending diagonally across one of said rectangular spaces and depending end portions mounted on said frame for resiliently supporting said internal support spring main body portion in general horizontal alignment with said load supporting deck, selected ones of said internal springs having main body portions longer than the main body portions of the remaining ones of said internal support springs, said selected internal support springs being arranged in said spring assembly adjacent said ends to provide added support to said ends of said box spring assembly where they are arranged, the selected internal support springs adjacent each end of said box spring assembly being in transverse alignment, and at least some of the remaining internal support springs being positioned in longitudinal alignment with said selected internal support springs, the depending end portions of said selected internal support springs being displaced transversely of said box spring assembly a distance that is substantially equal to the transverse displacement of the depending end portions of the remaining internal support springs which are in longitudinal alignment therewith whereby said selected and aligned remaining internal support springs extend between and are connected to adjacent pairs of longitudinally extending main springs, each of said selected internal support springs being positioned so that one depending end portion thereof is adjacent to a depending end portion of a longitudinally extending main spring to provide added support at the end of said box spring assembly and the other depending end portion of said selected internal support spring being positioned longitudinally inwardly of said one depending end portion to cooperate with the remaining internal support springs to provide support intermediate the ends of said box spring assembly.

4,195,377

LEG ASSEMBLY FOR A BED FRAME

John P. Kitchen, and Terry L. Gabhart, both of Georgetown, Ky., assignors to Hoover Universal, Inc., Saline, Mich.

Filed Sep. 7, 1978, Ser. No. 940,433
Int. Cl.[2] A47C 19/00; B60B 33/00
U.S. Cl. 5—310 4 Claims



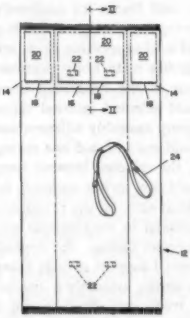
1. A caster-supporting leg assembly comprising a body member, a longitudinal passageway extending axially into said body member from an opening therein, a plurality of flexible and resilient tab members in said passageway formed integral with said body member at opposed positions spaced inwardly from said opening, said tab members extending radially inwardly into said passageway and away from said opening in relaxed positions, said tab members being bendable radially outwardly from the passageway axis when a caster stem having a recess therein is inserted into said passageway, said tab members being returned to their relaxed positions in the caster stem recess to be in an interfering relationship with the caster stem to inhibit its withdrawal from said passageway.

4,195,378

MULTIPURPOSE BEACH EQUIPMENT

James J. Parker, 23011 Lita Pl., Woodland Hills, Calif. 91364

Filed Oct. 24, 1978, Ser. No. 954,181
Int. Cl.[2] A47G 9/06
U.S. Cl. 5—419 2 Claims



1. A combined towel, beach lounging and sleeping pad, and suitcase, comprising:

an oversized, heavy-duty sheet of toweling material;

a continuous piece of toweling material attached to said sheet in a plurality of locations in a manner forming a large storage container substantially the size of a pillow at the center of one end of said toweling sheet for receiving and storing soft, bulky material and forming a plurality of additional individual storage containers on said toweling sheet, said additional containers being located toward the edges of said sheet to permit unimpeded use of said toweling sheet for reclining or for drying oneself after swimming;

waterproof zipper means for sealing said formed containers;

removable handle means for carrying said towel, said handle means encircling said combined towel in at least one location when said combined towel is rolled or folded up; and

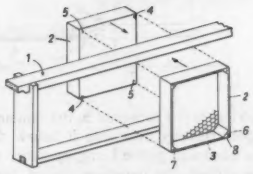
a plurality of snap means for releasably attaching said handle means to said sheet of toweling material.

4,195,379

DEVICE FOR COLLECTING HONEY AND COMB HONEY PACKAGE

Matthaus Krasnik, Schiefling/See 131, Karnten, Austria

Filed Sep. 21, 1977, Ser. No. 835,141
Int. Cl.[2] A01K 47/04, 47/02
U.S. Cl. 6—11 10 Claims



1. A device for collecting honey, comprising

at least one pair of integral one-piece boxes, each of which is open on one side and has on the other side an integral bottom,

a honeycomb pattern integrally formed on said bottom only inside the boxes,

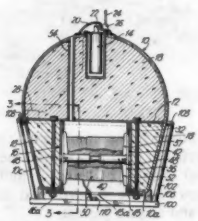
means for arranging said boxes with said bottoms facing and contacting each other, said means comprising outwardly projecting pins alternating with axial holes and located adjacent the corners on said bottoms opposite said honeycomb pattern.

4,195,380

LIFE SAVING APPARATUS FOR VESSELS

William Y. Higgs, Gibsons, Canada, assignor to Intercontinental Marine Limited, Canada

Filed Jun. 27, 1977, Ser. No. 810,684
Claims priority, application United Kingdom, Aug. 31, 1976, 36013/76; Norway, Oct. 6, 1976, 763413
Int. Cl.[2] B63B 21/52
U.S. Cl. 9—9 4 Claims



1. A buoy suitable for being carried on the deck of the vessel in a manner permitting release and floatation of the buoy should the vessel sink and including sufficient buoyancy to cause the buoy and parts carried thereby to float free from a sinking vessel, the buoy including an anchoring cable carried by a reel rotatably mounted within the buoy and being connected with the buoy and connectable to the vessel to maintain connection between the sunken vessel and the buoy, wherein the reel for the anchoring cable has a central shaft and circular end flanges mounted on said shaft, and wherein said reel is

mounted within a casing having bearings for the shaft and having end plates disposed inwardly of the bearings and having an opening for said anchoring cable to pass out of the casing, said end plates each having an internal surface which closely surrounds the periphery of the adjacent end flange of the reel while allowing free rotation of said flange within said internal surface, the space between the periphery of each end flange and the adjacent surface of an end plate being less than the diameter of the anchoring cable said end plates being spaced on opposite sides of said casing opening and preventing said cable from leaving said casing other than through said opening.

4,195,381

CLEANING APPARATUS FOR A REVOLVER

Mike Jurich, III, 2113 Trudie Dr., San Pedro, Calif. 90731

Filed Jun. 4, 1979, Ser. No. 45,222
Int. Cl.[2] B08B 9/00; A46B 15/00
U.S. Cl. 15—104.2 **1 Claim**

1. A cleaning attachment mechanism for cleaning a plurality of the chambers of the cylinder of a revolver simultaneously for use in combination with a cleaning apparatus for cleaning the barrel, which is rifled, of the revolver which includes:

a. a handle;

b. a first shaft having a length which is equal to the length of the cylinder;

c. a first mechanically coupling device for rotatably coupling the first shaft to the handle;

d. a second shaft which is equal in length to the length of the barrel of the revolver plus the length of the first shaft, said second shaft can be unattached;

e. a second mechanically coupling device for rigidly coupling the first shaft to the second shaft; and

f. a cylindrical wire brush rigidly coupled to the second shaft and adapted to rotate within the barrel of the revolver thereby cleaning it, said cleaning attachment mechanism comprising:

a. a triangularly shaped adaptor which is rigidly coupled to the first shaft adjacent to the second mechanically coupling device;

b. a plurality of short parallel shafts mechanically coupled to said triangularly shaped adaptor and disposed perpendicularly thereto and parallelly to the first shaft; and

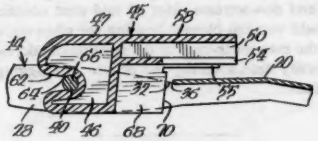
c. A plurality of cylindrical wire brushes each of which is rigidly coupled to one of said short shafts and is adapted to forceably slide through one of the chambers of the cylinder of the revolver.

4,195,382

REMOVABLE PLASTIC CONNECTOR

Robert B. Macpherson, Merrillville, Ind., assignor to The Anderson Company of Indiana, Gary, Ind.

Filed Oct. 12, 1978, Ser. No. 950,857
Int. Cl.[2] B60S 1/40
U.S. Cl. 15—250.32 **2 Claims**



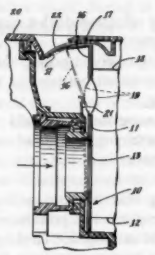
1. A connector for connecting a wiper arm to a wiper blade, said wiper arm having an outer end portion releasably attached to said connector, said wiper blade having a bridge member with an opening formed through the back thereof, a cross pin anchored on said bridge in alignment with said opening, said connector having a body portion, a forward part of said body portion having a gradually tapering slot extending inwardly therefrom and terminating in an enlarged circular aperture of a diameter larger than the width of a throat in said tapering slot, oppositely directed flanges extending outwardly from the peripheries of the opposite sides of said body portion, said flanges engage with walls of said opening in said blade to guide said connector during relative movement between the connector and said blade a single web connected to the mid-portion of said body portion and extending rearwardly therefrom, said web having a rear edge spaced from the center of said aperture an amount slightly less than the distance from the center of said pin to the adjacent edge of said opening in the bridge, said single web having a downwardly facing bottom edge coplanar with the bottom wall of the body portion and extending rearwardly an amount substantially equal to the distance from the center of the pin to said rear edge, said bottom edge having a lateral dimension equal to the thickness of said web, whereby said web prevents said connector from being removed from said blade when said blade and wiper arm are in normal operating position.

4,195,383

VACUUM CLEANER DEVICE

Karl E. Leinfelt, Stockholm, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Mar. 27, 1978, Ser. No. 890,509
Claims priority, application Sweden, Mar. 30, 1977, 7703645; Nov. 22, 1977, 7713157
Int. Cl.[2] A47L 9/00
U.S. Cl. 15—339 **15 Claims**



1. In the combination of a vacuum cleaner provided with a housing and a dust container therein, said dust container having an air pervious portion connected to an attachment plate of cardboard or the like, said plate having an inlet opening for

dust-laden air, the improvement comprising: a pressure sensitive element mounted in said attachment plate and movable in a predetermined direction upon the attainment of a specific pressure difference between the upstream and downstream side of said dust container, an indicating device co-acting and moving with said pressure sensitive element and also affected by the specific pressure difference prevailing between the upstream and downstream sides of said dust container, and means in said vacuum cleaner housing for allowing observation from the exterior thereof of the position of said indicating device thereby determinating the degree of clogging of the dust container.

4,195,384

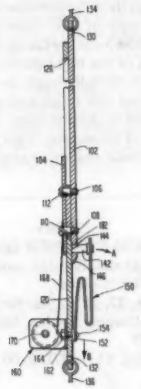
SELF-RESETTING, CABLE OPERATED TRANSLATING DRIVE LINK

Francis J. McCabe, 239 Hasting Ct., Doylestown, Pa. 18901

Continuation-in-part of Ser. No. 779,044, Mar. 18, 1977, Pat. No. 4,099,292, which is a continuation-in-part of Ser. No. 676,483, Apr. 13, 1976, Pat. No. 4,041,570, which is a continuation-in-part of Ser. No. 676,413, Apr. 13, 1976, Pat. No. 4,040,304, which is a continuation-in-part of Ser. No. 764,774, Feb. 2, 1977, which is a continuation of Ser. No. 689,994, May 26, 1976, Pat. No. 4,081,173, which is a continuation-in-part of Ser. No. 896,237, Apr. 14, 1978. This application Apr. 14, 1978, Ser. No. 896,299

Int. Cl.[2] E05F *15/20*

U.S. Cl. 16—48.5 **30 Claims**



1. A heat responsive releasing device comprising:

(a) a mounting member;

(b) a pawl member slidingly engaging said mounting member for sliding movement between at least two positions defined therealong;

(c) latching means associated with said mounting member for selectively restraining said pawl member relative to said mounting member in at least one of said positions;

(d) heat responsive means associated with said latching means for causing said latching means to restrain said pawl member in response to a preselected normal ambient temperature and for causing said latching means to release said pawl member in response to at least a preselected increase in said ambient temperature; and

(e) biasing means connected between said pawl member and said mounting member for generally biasing said pawl member and said mounting member into said at least one of said position.

4,195,385

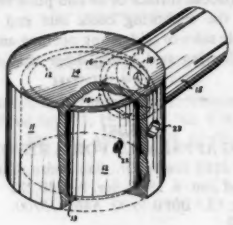
ROTATING SECURITY HINGE

George A. Cole, 4529 Royal Oak Dr. S.W., Roanoke, Va. 24015

Filed May 11, 1978, Ser. No. 905,289

Int. Cl.[2] E05D *1/06, 7/10*

U.S. Cl. 16—171 **1 Claim**



1. A rotating hinge mechanism comprising a pair of hollow cylinders arranged to rotate within one another and restricted in axial movement thereby, means for attaching an external spoke-like member to the periphery of the outer cylinder, an outer member extending over said spoke-like member, said outer member being attached by means accessible only through openings in both said cylinders, and means for attaching another outer member into the inner cylinders, said other member extending axially therefrom, the latter said attaching means being accessible only through an opening in the periphery of the outer cylinder at a predetermined rotational relationship between said cylinders.

4,195,386

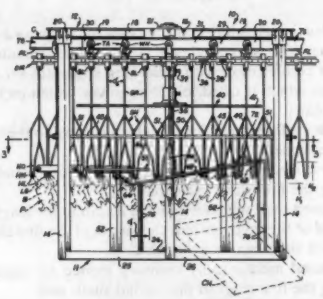
SHACKLE UNLOADING DEVICE

Ned T. Dodd, Rte. 2, Lula, Ga.

Filed Jul. 28, 1978, Ser. No. 928,819

Int. Cl.[2] A22C *21/00*

U.S. Cl. 17—44.1 **6 Claims**



1. A shackle unloading device for poultry comprising:

an overhead conveyor moving along a prescribed conveying path;

a plurality of shackle assemblies mounted on and moved by said overhead conveyor successively along the conveying path, each of said shackle assemblies including a shackle and a shackle support rod connecting said shackle to said overhead conveyor so that said shackle is supported below said overhead conveyor for swinging movement with respect thereto, each of said shackles having an upper portion and a lower portion, said lower portion including a pair of spaced apart hock holding loops adapted to support the poultry by its hocks and for the

poultry to be unloaded therefrom by lifting upwardly on the legs of the poultry adjacent its hocks;

infeed guide means positioned below said overhead conveyor in substantially vertical alignment with the conveying path for engaging the lower portion of each of said shackles above the hocks of the poultry carried thereby as the shackles move along the conveying path to keep the lower portion of said shackle substantially in vertical registration with the conveying path in a direction generally transverse of the conveying path while allowing said shackles to freely swing with respect to said overhead conveyor in a direction along the conveying path;

auxiliary guide means positioned below said overhead conveyor, above said infeed guide means and in substantially vertical alignment with the conveying path for engaging the upper portion of each of said shackles after engagement by said infeed guide means to keep the upper portions of said shackles substantially in vertical registration with the conveying path in a direction transverse of the conveying path while allowing said shackles to swing freely with respect to said overhead conveyor in a direction along the conveying path;

auxiliary driving means synchronously moving with said overhead conveyor for selectively engaging said shackle support rod of each of said shackle assemblies after engagement of said shackle by said auxiliary guide means so as to limit the swinging movenent of each of said shackle assemblies with respect to said overhead conveyor away from the vertical in a direction along the conveying path and opposite the direction of movement of said shackle assemblies by said overhead conveyor along the conveying path; and

pair of spaced apart elongate unloader bars positioned on opposite sides of the conveying path and extending therealong so that the lower ends of the hock holding loops of each of said shackles pass between said unloader bars while engaged by said infeed guide means, said auxiliary guide means, and said auxiliary driving means; said unloader bars keeping the hock holding loops of said shackles substantially in vertical registration with the conveying path in a direction generally transverse of the conveying path after release thereof by said infeed guide means and while engaged by said auxiliary guide means and said auxiliary driving means, said unloader bars further oriented to pass underneath the legs of the poultry adjacent their hocks and lift the hocks of the poultry upwardly with respect to the hock holding loops of said shackle to free the hocks from said shackle and unload the poultry therefrom while said shackles continue to be engaged by said auxiliary guide means and said shackle support rods continue to be engaged by said auxiliary driving means.

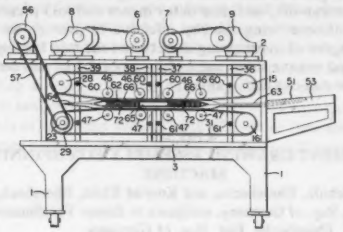
4,195,387

HORIZONTAL FISH KIDNEY-REMOVING MACHINE

Shigeo Iwase, Hakodate, Japan, assignor to Taiyo Seisakusho Manufacturing Co., Ltd., Hakodate, Japan

Filed Dec. 4, 1978, Ser. No. 965,988
Claims priority, application Japan, May 29, 1978, 53-63393
Int. Cl.² A22C *25/14*
U.S. Cl. 17—58 **3 Claims**

1. A horizontal kidney-removing machine comprising a pair of conveyor belts located at a distance in a vertical direction, a kidney-removing member disposed between the pair of conveyor belts, said member being composed of two flat metal plates which are combined together at both ends in boat-shaped forms each gradually diverging from the end to establish a space of a rectangular form at the central portion thereof, a guide plate for guiding the fish to be processed, said guide plate being fixedly secured to an induction plate on a table, an injection element located in the space of said removing machine and including a plurality of nozzles, pairs of belt tension-adjusting units provided at the central portion of the upper and lower conveyor belts, further pairs of belt tension-adjusting units located near a pair of guide pulleys located at the front portion of the machine and [illegible] a pair of drive pulleys located at the rear portion of the machine, respectively, and a keep plate disposed opposingly to the injector nozzles so that salmon or trout which is being fed and washed with pressur-



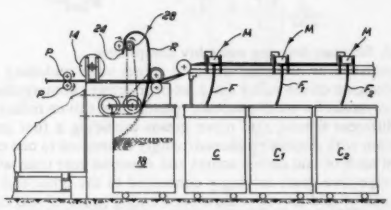
ized fluid injected from the injector nozzles to automatically remove the internal organs and kidney attached to the inner walls of the body of salmon or trout is prevented from escaping from the conveyor belts.

4,195,388

CAN CREELS FOR FEEDING FIBRE SLIVERS TO TEXTILE MACHINES

Beatrice Bulla, Via la Campagna, Serocca d'Agno, Switzerland

Filed Sep. 12, 1977, Ser. No. 832,360
Claims priority, application Italy, Jan. 27, 1977, 19702 A/77
Int. Cl.² D01G *23/00*
U.S. Cl. 19—157 **17 Claims**



1. A sliver feeding arrangement for simultaneoulsy feeding a plurality of moving active slivers to related textile machine means, comprising a plurality of first sources for providing a plurality of said active slivers, each of said first sources providing at least one active sliver, means for guiding each of said plurality of active slivers in their movement in predetermined paths so that said active slivers during at least a portion of said paths are moving generally parallel to each other, means for operatively engaging said active slivers as to draw said active slivers from said first sources, move said active slivers along said paths and feed said active slivers toward said textile machine/means, a second source for providing a reserve sliver, at least a pair of feed rollers, support means supporting said pair of feed rollers as to maintain said feed rollers generally transverse to and in spaced relationship to said active slivers moving through said portion of said paths, said feed rollers maintaining a leading portion of said reserve sliver therebetween, drive means operatively connected to said feed rollers and effective to at times drive said feed rollers as to thereby feed said reserve sliver therebetween, detecting means effective to detect the existance of each of said plurality of said active slivers and being further effective to detect the occurrence of a break or run-out in any of said plurality of said active slivers, upon detecting a said occurence of a break or run-out said detecting means also being effective for causing the occurrence of an electrical output signal for application to and consequent ener-

gization of said drive means to cause energization of said feed rollers to thereby cause feeding of said reserve sliver to thereby replace the detected broken or run-out sliver, and time delay means effective for delaying the said energization of said feed rollers until after the expiration of a preselected interval of time subsequent to said means detecting the said occurence of a break or run-out, said time delay means and said preselected interval of time being thereby effective to provide for a selected degree of overlapping as between the said leading portion of said reserve sliver and a trailing portion of said detected broken or run-out active sliver.

4,195,389

FILAMENT-DRAWING ASSEMBLY FOR SPINNING MACHINE

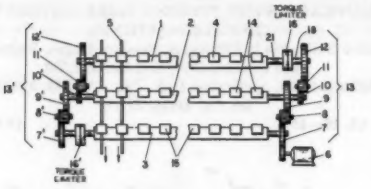
Günter Schulz, Ebersbachs, and Konrad Klein, Ebersbach, both of Fed. Rep. of Germany, assignors to Zinser Textilmaschinen GmbH, Ebersbachs, Fed. Rep. of Germany

Filed May 18, 1978, Ser. No. 907,413

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1978, 2807269; May 18, 1977, 2722532

Int. Cl.[2] D01H *1/22, 5/82*

U.S. Cl. 19—293 **12 Claims**



1. A filament-drawing assembly comprising:

a plurality of cascaded drawing stages each including an elongate driven roller and a set of coacting counterrollers;

drive means for simultaneously rotating said driven rollers at different speeds, said drive means including a first gear train with respective gears drivingly connected to one end of each of said driven rollers and a second gear train with respective gears drivingly connected to the other end of each of said driven rollers, confronting gears of said first and second gear trains matching each other to apply substantially identical torques to the ends of each driven roller;

torque-limiting means interposed between an end of at least one of said driven rollers and the corresponding gear drivingly connected thereto, said torque-limiting means having an input shaft rigid with said corresponding gear and an output shaft rigid with said one of said driven rollers, said shafts rotating in unison during normal operation but at different speeds in the event of an overload; and

signal-generating means operatively coupled with said shafts for giving an alarm indication upon relative rotation thereof.

4,195,390

APPARATUS AND METHOD FOR MANIPULATION AND SLEEVING OF TUBULAR MEMBERS

Randall M. Amen, Menlo Park, Calif., assignor to Scientific Technologies, Inc., San Antonio, Tex.

Continuation-in-part of Ser. No. 756,053, Jan. 3, 1977, abandoned. This application Nov. 10, 1977, Ser. No. 850,289

Int. Cl.[2] B23P *17/00;* **B21D** *39/08*

U.S. Cl. 29—421 R **8 Claims**

1. The method of expanding a tubular member comprising the steps of:

inserting an elongate, hollow cylindrical inflatable bladder into the tubular member;

clamping the ends of said bladder to an elongate tie rod in end cavities tapering inwardly in a direction longitudinally of the bladder toward each end;

forcing the ends of said bladder into said cavities with pressure applied internally of the bladder thereby sealing said bladder around said tie rod and limiting the expandable length of said bladder; and

applying internal pressure to expand said bladder and to apply only substantially radially outwardly directed pressure to the tubular member to stress the tubular member at least to the elastic limit in order to deform the tubular member.

4,195,391

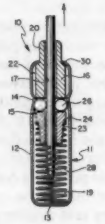
JEWELRY CLUTCH

Olof V. Anderson, North Kingstown, R.I., assignor to Anson Incorporated, Providence, R.I.

Filed May 8, 1978, Ser. No. 903,484

Int. Cl.[2] A44B *9/00*

U.S. Cl. 24—155 BR **6 Claims**



1. A jewelry clutch comprising:

an elongated generally circular housing, a first end of said housing being closed and a second end of said housing being turned inwardly to provide an aperture opening into the interior of said housing, the size of said aperture being less than the diameter of the interior of said housing,

an indentation formed in said housing intermediate said first and second ends, said indentation extending around said housing and providing a zone of reduced diameter within the interior of said housing, said area of reduced diameter constituting an inclined cam surface within said housing,

a carrier positioned for sliding movement within the interior of said housing,

said carrier having an axial bore therethrough of a diameter to permit sliding movement of an elongated pin therein, said bore being of a constant diameter over its entire length,

said carrier having an elongated main section of a dimension slightly smaller than said zone of reduced diameter within said housing, said carrier further having a first section extending from said main section toward the first end of said housing and a second section extending from said main section and projecting through said aperture in said housing a distance to permit manual contact with the end of said second section remote from said main section,

said carrier having a transverse passageway extending across the main section thereof at a position generally intermediate the length of the main section of said carrier,

a pair of gripping balls positioned for rolling movement within said transverse passageway, said balls being mov-

able from first positions free of engagement with said inclined cam surface to second positions projecting out of said passageway for engagement with said inclined cam surface when said elongated pin is inserted between said gripping balls,

and a spring compressed within the interior of said housing with one of its ends bearing on the first end of said housing and the opposite end of said spring engaging said carrier, said spring acting to bias said carrier toward said second end of said housing to thereby force said balls onto said inclined wall when said gripping balls are in said second positions with said pin positioned between said gripping balls whereby said gripping balls exert a force directed inwardly against said pin to thereby firmly secure said pin in engagement with said housing.

4,195,392

SEAT BELT BUCKLE DEVICE

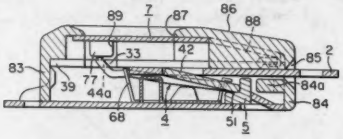
Takeo Ueda; Shinichi Fujita; Hideo Tachiki, all of Fujisawa, and Shuichi Asano, Maebashi, all of Japan, assignors to NSK-Warner K.K., Tokyo, Japan

Filed Jun. 29, 1977, Ser. No. 811,386

Claims priority, application Japan, Jun. 30, 1976, 51-85082[U]; Feb. 14, 1977, 52-15724[U]

Int. Cl.² A44B *11/26*

U.S. Cl. 24—230 A **16 Claims**



1. A latch device in a seat belt buckle, comprising: a load member having a bottom plate portion and side walls extending lengthwise of said bottom plate portion along the opposite side edges thereof, said side walls being formed with holes in opposed relationship, said bottom plate portion being formed with an upwardly extending projection, a latch member having a latching portion for locking a tongue, bias means for biasing said latch member toward a tongue locking position, a supporting bed for pivotally supporting said latch member, the opposite ends of said bed being received and securely positioned in said holes and the central portion of the bed being engaged with said projection to reinforce the bed, a push button adapted, when operated, to bring the latch member to the tongue unlocking position, and a cover having an inlet for inserting the tongue therethrough and an opening for operating said push button therethrough.

4,195,393

JUBILEE CLIP FASTENING

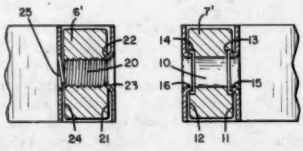
Wolfgang H. Henning, 3538 Marsberg, Fed. Rep. of Germany

Filed Mar. 6, 1978, Ser. No. 883,389

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1977, 2710751

Int. Cl.² B65D *63/00*

U.S. Cl. 24—280 **8 Claims**



1. Fastening clamp comprising a metal clamp strip including each free end bent away from said strip into a U-shaped member forming a pocket of a geometric cross-section; an angular filler piece received in each pocket of said U-shaped member; one of said angular filler pieces including a smooth wall central hole and other of said angular pieces including a threaded screw hole; a tightening screw passing through said smooth wall central hole and screwed into said threaded screw hole to move each end relative to the other end; said filler piece having said smooth wall central hole including at least one countersunk section provided at an end face of said smooth wall central hole and said filler piece having said threaded screw hole including a bevel at an end face of said filler piece whereby holes in said ends of said strap are correspondingly cut out and the ends of said strap around each of said cut outs are flanged to engage said countersunk section and said bevel respectively.

4,195,394

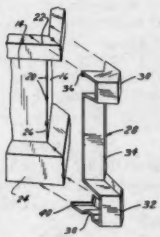
CASKET CORNER PIECE

William J. Semon, 505 Fuller Rd., Dalton, Pa. 18414

Filed Jun. 8, 1978, Ser. No. 913,602

Int. Cl.² A61G *17/00*

U.S. Cl. 27—10 **8 Claims**



1. An improved metal casket comprising in combination:

a pair of spaced side panels each having opposed ends;

a pair of spaced end panels each having opposed ends, the panels being so constructed and arranged that an end of a side panel is proximate an end of an end panel and such proximate ends being connected by a predetermined number of tack welds to define four corners extending from the top to the bottom of the casket;

a bottom secured to each of the panels, and a cap extending over the top of the casket; and

a corner piece over at least one of the corners extending from the top to the bottom of the casket, and the corner piece being secured in place on the casket, the panels being so constructed and arranged to define an outwardly projecting top rail and bottom rail over which a part of the corner piece is disposed, with the corner piece having a configuration and shape corresponding to that of its mating corner from the casket top to the casket bottom including the top and bottom rails, each corner piece including a downwardly projecting means at its top for engaging with internal surfaces of the top rail and upwardly projecting means for engaging with accommodating recess surfaces of the bottom rail for cooperating in securing the corner piece to the casket, and each corner piece being sufficiently resilient to permit spreading of the top and bottom thereof to facilitate mounting of the corner piece on its corner.

4,195,395

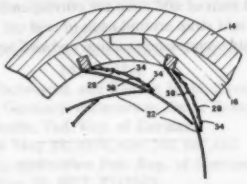
METHOD OF ROTATABLY SUPPORTING TWO MEMBERS WITH A FOIL BEARING HAVING A STIFFENER

Alexander Silver, Tarzana, and James R. Wenban, Redondo Beach, both of Calif., assignors to The Garrett Corporation, Los Angeles, Calif.

Division of Ser. No. 689,620, May 24, 1976, Pat. No. 4,153,315. This application Dec. 7, 1977, Ser. No. 858,503

Int. Cl.[2] B21D *53/10*

U.S. Cl. 29—149.5 S **7 Claims**



1. A method of supporting relative rotation between two members, one of which being supportive of the other, comprising the steps of:

providing a plurality of compliant, overlapping foils between the two members;

mounting each of said compliant foils with a first free end of each of said plurality of foils extending between said two members and overlapping an adjacent one of said plurality of foils; and

fixedly mounting one end of a foil stiffening means on said one of said members for increasing the effective stiffness of each of said bearing foils by providing damping by bending as a beam in a first operative configuration and providing damping by bending in flexure in a plurality of beam segments in a second operative configuration.

4,195,396

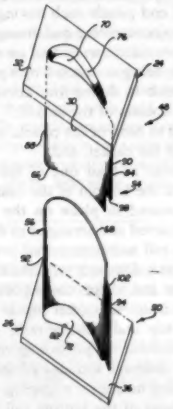
METHOD OF FORMING AN AIRFOIL WITH INNER AND OUTER SHROUD SECTIONS

William S. Blazek, Valley City, Ohio, assignor to TRW Inc., Cleveland, Ohio

Filed Dec. 15, 1977, Ser. No. 860,684

Int. Cl.[2] B21K *3/04*

U.S. Cl. 29—156.8 H **25 Claims**



1. A method of forming inner and outer shroud sections with an airfoil extending between them, said method comprising the steps of forming a first airfoil section having a free end portion and an opposite end portion connected with the inner shroud section, said step of forming the first airfoil section and inner shroud section includes the step of forming an opening in the inner shroud section, forming a second airfoil section and an outer shroud section with the second airfoil section having a free end portion and an opposite end portion connected with the outer shroud section, said step of forming the second airfoil section and outer shroud section including the step of forming an opening in the outer shroud section, connecting the free end portion of the first airfoil section to the outer shroud section, said step of connecting the free end portion of the first airfoil section to the outer shroud section including the step of positioning the free end portion of the first airfoil section relative to the outer shroud section by inserting at least part of the free end portion of the first airfoil section into the opening in the outer shroud section, and connecting the free end portion of the second airfoil section to the inner shroud section, said step of connecting the free end portion of the second airfoil section to the inner shroud section including the step of positioning the free end portion of the second airfoil section relative to the inner shroud section by inserting at least part of the free end portion of the second airfoil section into the opening in the inner shroud section.

4,195,397

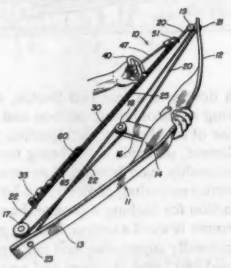
COMPOUND BOW STRINGER

Charles A. Saunders, Columbus, Nebr., assignor to Saunders Archery Company, Columbus, Nebr.

Filed Jun. 28, 1978, Ser. No. 919,845

Int. Cl.[2] B23P *19/02*

U.S. Cl. 29—235 **4 Claims**



1. In a bow stringer for restringing a compound bow of the type including

an inextensible cord, said cord including a first end, a second end opposed to said first end, and means for attaching the second end to a first string segment supported by one limb of a bow,

a handle comprising a bar attached to the first end of the cord and slidably embracing a portion of said cord intermediate said first end and said second end, thereby forming a looped segment in a portion of the cord adjacent said first end thereof,

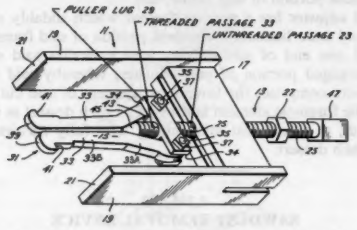
means for attaching said looped segment to a second string segment supported by an opposing limb of a bow at a location on said cord intermediate said first end and the portion of the cord embraced by said bar, and an improvement comprising:

elastic slack take-up means attached to a first locus on said cord and to a second locus on said cord separated from said first locus by a pre-determined cord length, said slack take-up means being shorter than said pre-determined cord length when said cord is slack and substantially equal to said pre-determined cord length when said cord is taut for reducing slack in said cord upon initial engagement of said attachment means to said first and second string segments thereby preventing inadvertent detachment of said attachment means therefrom.

4,195,398
PULLING TOOL

Robert L. Matthews, Rte. #11, Box 114, Baton Rouge, La. 70811

Filed Dec. 12, 1977, Ser. No. 859,820
Int. Cl.[2] B23P *19/04*
U.S. Cl. 29—262 6 Claims



1. A pulling tool comprising:

a brace having a base and leg means for supporting the base relative to a surface, said leg means extending from the base in one direction, the base having a passage extending therethrough in the same general direction,

a single-piece, threaded shaft extending through said passage and free to slide axially therein without rotation, a first nut having an internal thread correlative to that of the shaft screwed on the shaft on the side of the base opposite from the leg means and adapted to engage the base and be turned to exert a pulling force on the shaft,

an H-shaped second nut having an internal thread correlative to that of the shaft and a first and a second channel formed by the H-shape of the nut, said second nut being screwed on to the shaft on the same side of the base as said leg means,

a single-piece first hook having one end received in said first channel of said second nut and first connecting means for pivotally connecting said one end of said first hook to the sides of said first channel,

a single-piece second hook having one end received in said second channel of said second nut and second connecting means for pivotally connecting said one end of said second hook to the sides of said second channel,

said first and second hooks each having a first portion adjacent said second nut and extending generally away from the base a second portion adjoining said first portion at the point of said first portion farthest removed from said second nut and extending generally away from the base in a direction substantially parallel to the axis of said shaft, said second portion and said first portion forming an obtuse angle with respect to one another, said first portions of said hooks provided with wedging surfaces diverging from each other progressing in a direction toward said base, one end of said shaft having a conical tip engageable with said wedging surfaces to spread said hooks apart, and means on the other end of said shaft for facilitating turning of the shaft, said second portions of said hooks having a flange at the end of said second portions farthest removed from said first portions.

4,195,399
METHOD AND APPARATUS FOR INSERTING END CAPS INTO CORES OF WOUND ROLLS

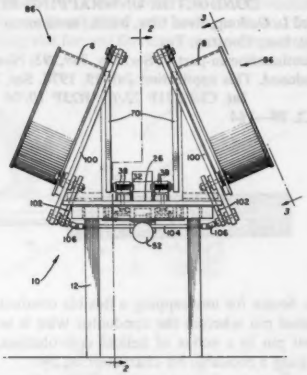
Holger Rasmussen, Kilchberg, Switzerland, and Paul N. Jespersen, Houston, Tex., assignors to Georgia-Pacific Corporation, Portland, Oreg.

Filed Apr. 11, 1978, Ser. No. 895,483
Int. Cl.[2] B21D *39/03*
U.S. Cl. 29—429 19 Claims

1. The method of inserting end caps into the ends of the cores of wound rolls such as toilet tissue, toweling and the like comprising the steps of:

driving a roll at a predetermined speed along a path with the roll core ends exposed at the sides of said path,

moving an end cap holder at said predetermined speed along each side of said path in a course having a portion thereof that approaches the center line of said path, said end cap holder having means for encompassingly engaging a first axially extending section of said end cap,



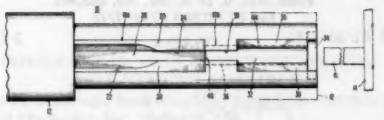
feeding an end cap to each of the holders, and

encompassingly engaging said first axially extending end cap sections by the holders as the holders approach said portion of said course whereby the holders press a second axially extending section of the end caps into the core ends of the roll as the roll and holders travel in synchronism along said roll path.

4,195,400
WIRE WRAPPING BIT FOR SEMIAUTOMATIC WIRING MACHINES

George J. Sprenkle, Phoenixville, Pa., assignor to Burroughs Corporation, Detroit, Mich.

Filed Dec. 18, 1978, Ser. No. 970,759
Int. Cl.[2] B21F *3/00, 15/00*; B23P *19/00*
U.S. Cl. 29—753 8 Claims



1. A wire wrapping bit for use in a wiring machine and having an aperture at its free end for receiving a terminal upon which a wire is to be wrapped comprising:

a generally cylindrical member having in the outer surface thereof a plurality of contiguous, longitudinally disposed sections for receiving said wire prior to a wrapping operation,

a first section farthest removed from said free end of said bit including a substantially planar surface having formed therein a notch and a groove in adjacent longitudinal relationship,

a second section adjacent said free end of said bit including a surface substantially coplanar with said surface of said first section and having formed therein a semicylindrical depression,

a third section intermediate said first and second sections and having a bore substantially coaxial with said semicylindri-

cal depression and being of like diameter, said bore having one of its extremities terminating at said semicylindrical depression and its opposite extremity terminating at said groove, and a slot-like opening into said bore from said outer surface of said member, said opening traversing said third section in substantial longitudinal alignment with said groove in said first section.

4,195,401

CONDUCTOR UNWRAPPING BIT

Clifford L. Galloup, Reed City, Mich., assignor to Cooper Industries, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 849,293, Nov. 7, 1977, abandoned. This application Jul. 19, 1978, Ser. No. 925,894

Int. Cl.[2] B21F *21/00*; B23P *19/04*

U.S. Cl. 29—764 **4 Claims**

1. A device for unwrapping a flexible conductor wire from a terminal pin wherein the conductor wire is wound on said terminal pin in a series of helical convolutions, said device comprising a rotatable bit characterized by:

a shank portion having a transverse end face;

a longitudinal terminal receiving bore in said bit opening to said end face;

a generally conical shaped recess formed in said bit converging from said end face toward said bore and adapted to engage one or more convolutions of said conductor wire;

at least one longitudinal slot formed by a pair of opposed surfaces each intersecting said recess; and,

a substantially transverse slot intersecting said longitudinal slot and said recess and having a bottom wall forming a ledge for engaging the distal end of said conductor wire, so that upon rotation of said bit said helical convolutions are loosened from tight engagement with said terminal pin.

4,195,402

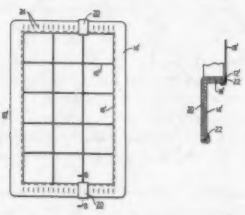
DESSERT CUTTER

Elissa Leffer, 84 Ivy Way, Aberdeen Township, Matawan County, N.J. 07747

Filed Mar. 6, 1978, Ser. No. 883,901

Int. Cl.[2] B26D *3/24, 3/18*

U.S. Cl. 30—114 **3 Claims**



1. For use with desserts, a cutter, comprising:

a peripheral frame having

a hand grip portion circumscribing a support portion having a guide surface, and

a plurality of stretched cutting wires circumscribed by the guide surface; and further comprising

at least one wire adjuster slidably engaged with both said hand grip portion and said support portion of the peripheral frame; wherein

said adjuster has one outermost end of one of said cutting wires fixed thereto, to effect a selective displacement of said one end of said one wire upon slidable movement of said adjuster relative to said frame; wherein

said hand grip portion comprises an uppermost portion of said frame, and said support portion comprises a lowermost portion of said frame; and

said adjuster has a portion thereof which slidably engages and underlies said lowermost portion of said frame; and

said one end of said cutting wire underlies said slidably engaged portion of said adjuster, whereby said cutting wire comprises the lowermost element of said cutter and the foremost element addressed to such dessert as is to be cut, to insure that said cutting wire fully traverses said such dessert.

4,195,403

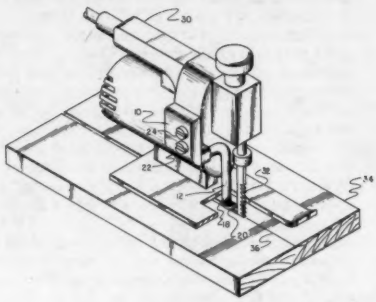
SAWDUST REMOVAL DEVICE

Clarence R. Gruber, 14 Falls Ct., Fort Myers, Fla. 33908

Filed May 9, 1979, Ser. No. 37,523

Int. Cl.[2] B27B *19/09*; B27C *3/08*

U.S. Cl. 30—123.3 **9 Claims**



1. A sawdust removal device for attachment to the exterior housing of an electric-powered saw or drill, comprising:

(a) an exhaust port cover having an air trapping depression for trapping and diverting air discharged from an exhaust port of the saw or drill and an interior air passageway having an entrance opening interconnected with said air trapping depression;

(b) an air delivery tube interconnected at one end thereof with the exit opening of said interior air passageway in said exhaust port cover;

(c) an air nozzle and a diffuser on the other end of said air delivery tube for discharging trapped and diverted air to continuously blow away sawdust, chips and other debris from the surface of the material being cut or drilled; and

(d) means for attaching the device to the exterior housing of the electric-powered saw or drill.

4,195,404

CUTTING MACHINE WITH AN OSCILLATING KNIFE

Walter Schweitzer, Stuttgart, Fed. Rep. of Germany, assignor to Krauss u. Reichert GmbH & Co. KG Spezialmaschinenfabrik, Fellbach, Fed. Rep. of Germany

Filed Mar. 17, 1978, Ser. No. 887,676

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1977, 2712673

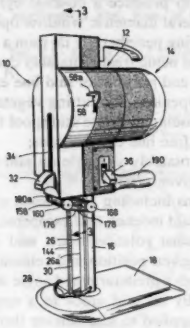
Int. Cl.[2] B26D *7/12*

U.S. Cl. 30—139 **10 Claims**

1. A cutting machine comprising

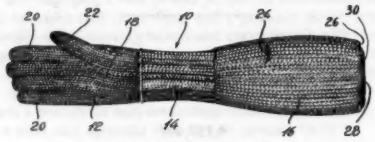
a motor mounted in a housing for driving a lengthwise oscillating knife extending in a substantially vertical direc-

tion, further comprising a material presser foot mounted on a carrier bar extending in the longitudinal direction of the knife and displaceably guided in this direction at the housing, and also comprising an actuating member



mounted on the housing for releasing a support means for the carrier bar, characterized in that the actuating member (186) is also coupled with a lifting device (196) for lifting the carrier bar (30) in a stepwise manner.

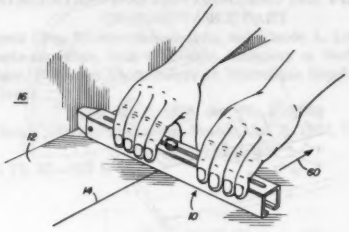
4,195,405
COMBINED MITTEN AND GLOVE
Lilly Monk, Mount Royal, Canada, assignor to Paris Glove of Canada Ltd., Montreal, Canada
Filed Mar. 15, 1979, Ser. No. 20,862
Int. Cl.[2] A41D *19/00*
U.S. Cl. 2—158 **3 Claims**

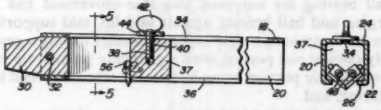


1. A combined mitten and glove, including an elongated tubular member including at one end of the tube a closed glove with finger and thumb portions extending therefrom, a waisted wrist portion connected to the glove and a tubular mitten portion extending from the wrist portion in the opposite direction, the mitten being open at its free end with an overlapping flap covering the free end, and a thumb portion formed in the mitten portion such that when the glove is worn, the mitten portion can be folded over to cover the glove portion with the thumb of the mitten portion coinciding with the thumb portion of the glove portion, and the overlapped flap covering the opening at the end of the tubular mitten over the fingers.

4,195,406
SCRIBE KNIFE
Gillam B. Lackey, 406 N. Harrison, Aurora, Ill. 60506
Filed Sep. 26, 1978, Ser. No. 946,043
Int. Cl.[2] B26B *3/00*
U.S. Cl. 30—164.9 **2 Claims**

1. A scribe knife comprising an elongated tubular body including an endwise outwardly projecting contour tracing nose on one end and including a lower longitudinal side for overlying and sliding over soft flooring materials, the other end of said body being open and said lower longitudinal side having a wide longitudinally extending slot formed therein opening through the end of said lower side remote from said nose at said other end of said body, a support block slidably supported within said body for guided movement therealong and displaceable outwardly from said body through the open other end thereof, said block and body including coacting means operative to releasably retain said block in adjusted shifted position within said body, and a V-shaped blade removably supported from, and in overlying relation to, the end of said block adjacent said nose and including an apex which projects downwardly, slightly, through said slot and is receivable through the open end of said slot, said blade including upwardly divergent straight cutting edges converging downwardly toward an apex and disposed in a plane normal to the longitudinal center line of said tubular body, said tubular body including an upper longitudinal side having a narrow longitudinally extending slot formed therein, a clamp screw extending





and slidable through said narrow slot and removably threaded into said block for releasably clamping the portion of said upper longitudinal side adjacent said clamp screw between the latter and the underlying portions of said block, the opposite ends of said narrow slot being closed to define limits of shifting of said block within said tubular body by engagement of said clamp screw with the portions of said upper side defining the closed ends of said narrow slot, said tubular body being substantially rectangular in cross section and said block being of a similar cross section, the corner edges of said block extending longitudinally of said body being beveled, said slots being vertically registered, whereby the apex of said blade may be viewed, from above said body, through said slots.

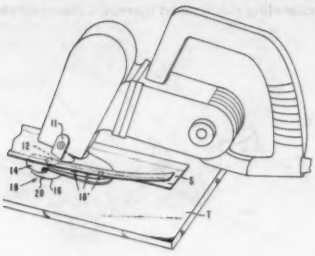
4,195,407
POWER SHEAR YOKE CONSTRUCTION AND BALL-BEARING ASSEMBLY
James H. Stubbings, Rockville, Md., assignor to Potomac Applied Mechanics, Inc., Bethesda, Md.
Filed Sep. 8, 1978, Ser. No. 940,852
Int. Cl.[2] B26B *15/00*
U.S. Cl. 30—228 **14 Claims**

6. In a sheet metal tool comprising an upper blade adapted to be disposed above the surface of a horizontally disposed metal sheet to be cut; a lower blade adapted to be disposed below the surface of a horizontally disposed metal sheet to be cut, and having leading and trailing edges; means for moving at least one of said blades with respect to the other to effect cutting of the metal sheet; and an arm mounting said lower blade in position below said sheet, said arm having an upper surface with which said lower blade is operatively associated, a ball bearing and means for mounting said ball bearing on said arm for universal rotatable movement with respect to said arm and so that a portion of said ball bearing extends outwardly from said arm upper surface so that it engages the bottom surface of a metal sheet during cutting with said tool, to allow easier

pivoting of said tool during cutting to change the direction of cutting; wherein the improvement comprises

said means for mounting said ball bearing comprising

means defining a bore in said arm in the thickness thereof and extending generally perpendicularly to said upper surface, the bore having a diameter greater than the diameter of said ball bearing except at said upper surface, an opening concentric with said bore in said upper surface being provided, the opening in said upper surface having a smaller diameter than said ball bearing, a lip being provided defining said opening in said first surface;



supporting means for said ball bearing for supporting said ball bearing for universal rotatable movement and for urging said ball bearing against said lip, said supporting means comprising a rigid support member having a generally conical end portion with a generally pointed tip portion, said tip portion being in direct contact with said ball bearing; and

means for maintaining said rigid support member in a predetermined position with respect to said arm.

4,195,408

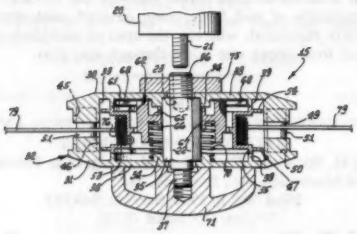
CONVERTIBLE, AUTOMATIC TO MANUAL, NYLON LINE VEGETATION CUTTER

Vincent Palmieri, and John P. Palmieri, both of 3745 El Camino Dr., San Bernardino, Calif. 92410

Filed Mar. 1, 1979, Ser. No. 16,562

Int. Cl.[2] A01G *3/06*

U.S. Cl. 30—276 **2 Claims**



1. In a flexible-line-whirling vegetation cutting hand tool, a rotary head for which is provided to be supported on and manipulated by a relatively long handle, equipped with power means for rapidly spinning said head on a vertical axis, the improvement comprising the following combination:

a pair of like hollow circular housing halves abutting in face-to-face relation to provide a cylindrical housing for said rotary head, said housing halves having co-axially apertured hubs, said apertures including polygonal internal wrench configurations;

a polygonal arbor opposite end portions of which snugly fit into said wrench configurations to prevent relative rotation between said housing halves, said arbor having threaded means of reduced diameter extending axially at its opposite ends through said co-axial apertures to receive upper and lower nut means for snugly assembling said housing halves on said arbor, said housing when so assembled, uniting to produce a co-axial cylindrical chamber having peripheral diametric window openings;

a spool for carrying peripherally thereon a reserve supply of cutting line and being freely rotatably confined within said chamber, free end portions of said line extending through said window openings, for cutting vegetation and producing a torque tending to rotate said spool to supplement the length of said free line end portions;

an indexer non-rotatably slideable on said arbor and spring biased into a given position;

escapement means including lock means on said spool and lug means on said indexer, said escapement means locking said spool against rotation when said indexer is in its spring biased given position and releasing said spool for rotation through a predetermined angle when said indexer is shifted axially on said arbor to a second position by inertia forces applied to said indexer through said handle while said head is spinning; and

an annular packing means fitting in said chamber between one of said housing halves and said spool and replacing said indexer to produce an optional mode of operation in which control of feeding said line from said spool is effected exclusively manually, and while the tool is shut down, by loosening one of said arbor nut means, pulling said line ends desired amounts outwardly through said line windows, and then tightening said loosened arbor nut means.

4,195,409

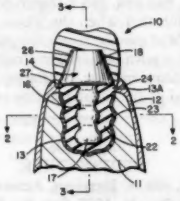
DENTAL IMPLANT

Frank W. Child, Eagle Bend, Minn., assignor to Child Laboratories Inc., Eagle Bend, Minn.

Filed Feb. 13, 1978, Ser. No. 877,073

Int. Cl.[2] A61C *13/00*

U.S. Cl. 433—175 **36 Claims**



1. A prosthesis for tooth replacement in a living body comprising: a root having a head and a stem, a crown attached to the head, said crown having a cavity accommodating the head and an edge surrounding the cavity, an elastic body surrounding and mounted on the stem, said body having a portion located in engagement with said edge of the crown, and porous means surrounding the elastic body and secured thereto, said porous means and elastic-body being deformable for insertion into a mandible tooth socket whereby bone growth into the porous means anchors the root to the bone.

4,195,410

DEVICE FOR MEASURING THE LENGTH OF A WEB

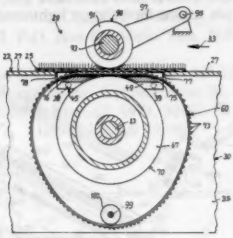
Willi Strohmeyer, Grimsehlstrasse 37, D-3352 Einbeck, Fed. Rep. of Germany

Filed Oct. 28, 1977, Ser. No. 846,524

Claims priority, application Fed. Rep. of Germany, Nov. 13, 1976, 2651822

Int. Cl.[2] G01B *3/12, 5/04*

U.S. Cl. 33—134 R **11 Claims**



1. A device for measuring the length of a web, such as a floor covering or the like, having a front face and a rear face, comprising support means having a planar support surface adapted to support one of the faces of a web movable in longitudinal direction over said support surface, said support surface being formed with a first opening therethrough; an endless flexible contact band having an outer face frictionally engaging the rear face of the web; guide means having a substantially planar guide face extending parallel to and spaced from said support surface for guiding a portion of said flexible contact band parallel to said support surface; a measuring wheel having an axis of rotation normal to the direction of movement of the web and engaging a face of said portion of said endless flexible band opposite said outer face; and a pressure means arranged opposite said measuring wheel and cooperating with the latter for pressing the web into engagement with said outer face of said contact band, said guide face being formed with at least one second opening opposite said pressure means through which a portion of said measuring wheel extends into engagement with said opposite face of said contact band.

4,195,411

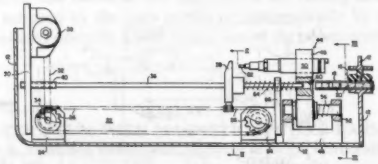
REMOTE GAGING APPARATUS

Kenneth S. Gerkey, Mt. Lebanon, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 25, 1978, Ser. No. 900,039

Int. Cl.[2] G01B *5/00*

U.S. Cl. 33—143 L **7 Claims**



1. Remote gaging apparatus for remotely measuring the pellet stack length within a nuclear reactor fuel element comprising:

a housing capable of having a nuclear fuel element inserted therein;

support means for holding said fuel element in gaging position;

a rod having a stop mounted thereon and disposed within said housing capable of being inserted into an open end of said fuel element for contacting nuclear fuel pellets in said fuel element and causing said fuel pellets to become tightly packed in said fuel element;

drive means disposed within said housing and attached to said stop for selectively inserting said rod into said fuel element; and

measuring means disposed within said housing and associated with said stop for contacting said stop when said rod is inserted into said fuel element thereby measuring the length of insertion of said rod in said fuel element with respect to said open end of said fuel element.

4,195,412

INSTALLATION FOR CONTROLLING THE POSITION OF A MOVABLE PART

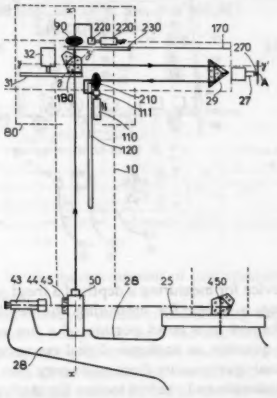
Helenio Llop, Montreuil-sous-Bois, and Claude A. Letort, Boulogne-sur-Seine, both of France, assignors to Societe d'Optique, Precision Electronique et Mecanique Sopelem, Paris, France

Filed Jul. 7, 1978, Ser. No. 922,808

Claims priority, application France, Jul. 8, 1977, 7721099

Int. Cl.[2] G01B *5/20*

U.S. Cl. 33—169 R **8 Claims**



1. Apparatus for controlling the position of a part movable along at least two directions xx' and yy', said movable part being movable along a first slide extending parallel to said direction yy', said first slide being mounted on an arm carried by a carriage movable along a second slide extending parallel to said direction xx', said second slide being mounted on a chassis, said apparatus comprising:

means for locating the position y of said movable part along said first slide;

means for locating the position x of said carriage along said second slide;

a device for measuring the error in the straightness of said second slide comprising;

means for emitting a first narrow laser beam parallel to said direction xx' and defining a first reference axis, and a first photoelectric detector in the path of the beam for producing a signal representing the transverse deviation Δy of said carriage relative to said first reference axis; and

a device for measuring the error in the orthogonality of said first slide comprising an optical means mounted on said carriage for deflecting said first laser beam to form a second laser beam which is perpendicular to said first beam and defines a second reference axis parallel to the direction, and a second photoelectric detector for measuring the transverse deviation Δx of said movable part relative to said second reference axis;

means for producing a third laser beam which is precisely parallel to said first beam and a third photoelectric detec-

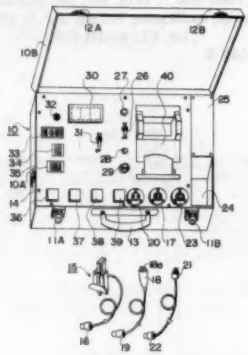
tor for measuring the transverse deviation of said third beam in the direction y-y', said three photoelectric detectors also measuring the transverse deviation Δz of the three respective laser beams in a direction zz' forming a tri-rectangular trihedron with the direction xx' and yy'.

4,195,413

DEVICE FOR MEASURING DEPTH OF TIRE TREAD GROOVE IN A TIRE

Yoshifumi Haraguchi, Kunitachi; Hiroshi Fukuyama, Higashimurayama, and Shu Kamiguchi, Kodaira, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Dec. 20, 1978, Ser. No. 971,153
Claims priority, application Japan, Jan. 24, 1978, 53-6539
Int. Cl.[2] G01B 7/26
U.S. Cl. 33—169 B **11 Claims**



1. A device for measuring a depth of a tread groove in a tire, comprising: a sensor for measuring the depth of the tread groove formed in a tread portion of a tire as an electrical analogue quantity, an analogue-digital converter for converting said analogue quantity from said sensor into a digital quantity, a calculation and control section for storing a plurality of said digital quantities and making a given calculation against the stored digital quantities in accordance with a command from exterior, an indication section for indicating a result calculated in said calculation and control section, and external preset members electrically connected to the calculation and control section for presetting a body number of a vehicle provided with tires to be measured, a location number of a tire to be measured in said vehicle, and the number of measurements to be made on said tire.

4,195,414

ELECTRICALLY LIGHTED SIGHT FOR AN ARCHERY BOW

Raymond G. Robinson, 114 West Ridge St., Gastonia, N.C. 28052

Filed May 14, 1979, Ser. No. 38,405
Int. Cl.[2] F41G 1/32
U.S. Cl. 33—265 **10 Claims**

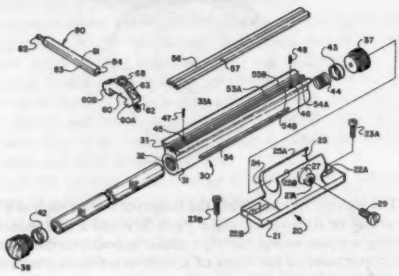
1. An electrically lighted, vertically and laterally adjustable sight for an archery bow, comprising:

a. an elongate housing means for operatively housing an electric battery and for being mounted lengthwise on an archery bow in parallel alignment adjacent the hand grip portion thereof;

b. a first electrically conductive contact means for being longitudinally carried on an outer surface of said housing means along a substantial part of the length thereof and including means for operative electrical connection with the electrical battery;

c. sight pin holding means slidably mounted on said housing means for selectively adjustable movement along the longitudinal extent of said first electrically conductive contact means;

d. elongate sight pin means for being slidably mounted on said sight pin holding means for selectively adjustable transverse movement perpendicular to the longitudinal direction of movement of said sight pin holding means, said sight pin means including a light emitter on one end thereof;



e. a second electrically conductive contact means for being longitudinally positioned on the outer surface of said sight pin means along a substantial part of the length thereof and including means for operative electrical connection with said light emitter; and

f. current conducting means carried by said sight pin holding means for operative electrical interconnection of said first and said second electrically conductive contact means;

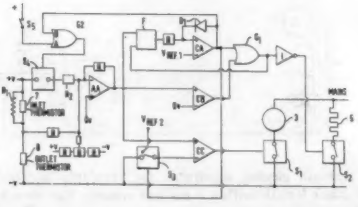
whereby said sight pin means and said sight pin holding means are slidably adjustable relative to each other and relative to said housing means while electrically interconnected to provide lateral and vertical adjustment of the bow sight.

4,195,415

AIR DRIERS AND CONTROL CIRCUITS THEREFOR

Rodney Livings, Havant, and Richard J. Bosiacki, Portsmouth, both of England, assignors to Thorn Domestic Applicances (Electrical) Limited, London, England

Filed Mar. 20, 1978, Ser. No. 888,429
Claims priority, application United Kingdom, Mar. 24, 1977, 12504/77
Int. Cl.[2] F26B 11/04
U.S. Cl. 34—48 **14 Claims**



1. In an air drier comprising: a chamber in which, in use, articles are placed for drying; means for causing air to pass through the chamber; and means for heating the air before it enters the chamber; the improvement comprising a control circuit for controlling the amount of heat applied to the air in dependence upon the difference between the temperature of air leaving the drier and that of ambient air, the control circuit

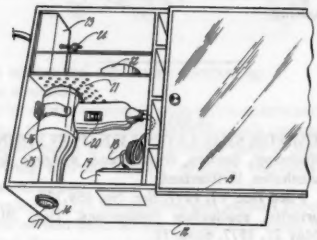
including means for compensating the drying characteristic of the drier automatically for variations in ambient temperature such that for decreasing values of ambient temperature, the control circuit tends to maintain said temperature difference at a higher value.

4,195,416

COMBINATION HAIR/HAND/BODY DRYER AND VAPOR DISPENSER

Marshall J. Hall, P.O. Box 67, Mona Vale, N.S.W., Australia (2103)

Filed May 25, 1978, Ser. No. 909,527
Claims priority, application Australia, May 30, 1977, PD0274; Aug. 3, 1977, PD1092; Mar. 23, 1978, 34492/78
Int. Cl.² F26B *19/00*
U.S. Cl. 34—90 **10 Claims**



1. A hair/hand/body dryer and simultaneous vapor dispenser housed in a cabinet mountable in or on a building, for example in a bathroom, washroom shower and change room or other like area, comprising in combination:

a cabinet having a vent,

a suction and heating means mountable in the cabinet and having a cold air intake and a hot air outlet, the hot air outlet of the suction and heating means being so shaped and disposed in the cabinet so as to project expelled air through said vent provided in the cabinet wall;

a supply of vaporizing material;

means for supporting and replenishing the supply of said vaporizing material;

and means for electrically connecting said suction and heating means to an electric power source, said electrical connection means comprising a power lead, a push-button time switch wired electrically in series with the power lead to the suction and heating and a manually operable on/off switch wired electrically in parallel with said push-button time switch so that said suction and heating means is actuated by the push-button or independently by the manually operable on/off switch across the power source.

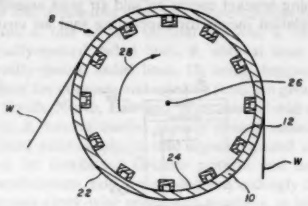
4,195,417

DRYER DRUM WITH MAGNETIC SPOILER BARS

Gerald A. Mathews, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.

Filed Jan. 19, 1979, Ser. No. 4,908
Int. Cl.² F26B *13/08*
U.S. Cl. 34—110 **7 Claims**

1. In a dryer drum having a cylindrical shell and adapted to rotate and dry material on the exterior surface of the shell as a condensible fluid within the drum condenses and gives up heat through the shell, the shell having a plurality of spoiler bars positioned on its inner surface to interrupt and reduce the effective thickness of the condensate, which is urged thereagainst by the centrifugal forces induced during rotation, and thereby enhance heat transfer through the dryer drum shell, the improvement wherein:



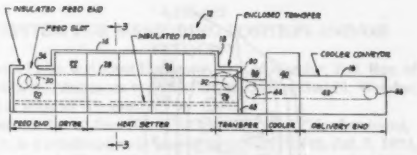
the spoiler bars are magnetically secured to the dryer drum shell.

4,195,418

ZONED HEAT TREATING APPARATUS

Lloyd F. Sturgeon, Oreland, Pa., and George M. Tice, Lexington, N.C., assignors to SCM Corporation, New York, N.Y.

Filed Sep. 18, 1978, Ser. No. 943,327
Int. Cl.² F26B *25/06*
U.S. Cl. 34—216 **13 Claims**



1. Apparatus for the heat treatment of tow comprising

a housing means;

first and second conveyor means in said housing means, each conveyor means comprising feed and discharge ends;

means to deposit said tow on the feed end of said first conveyor means in an undulating pattern defining at least one substantially straight unbroken bed of tow having substantially uniform maximum thickness and width dimensions;

means to drive said first conveyor means to advance the tow from the conveyor means feed end to the conveyor means discharge end;

means to advance the second conveyor means, the feed end of the second conveyor means being adjacent the discharge end of the first conveyor means; and

transfer means to transfer the tow from the first conveyor means discharge end to the second conveyor means feed end including a generally flat plate to pick up the tow from the first conveyor means, and integral therewith, a chute means comprising a roof, floor and sides to deposit the tow from said flat plate onto the second conveyor means feed end, said chute means having height and width dimensions substantially the same as the thickness and width dimensions of the bed of tow.

4,195,419

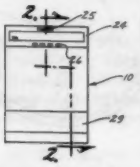
AIR INLET FOR A DISHWASHING APPARATUS

Lawrence L. Quayle, Lambs Grove, Iowa, assignor to The Maytag Company, Newton, Iowa

Filed Sep. 6, 1978, Ser. No. 940,029
Int. Cl.² B08B *3/04*
U.S. Cl. 34—231 **12 Claims**

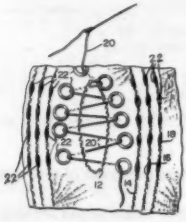
1. An air inlet system for a dishwashing apparatus having means including a tub for defining a washing chamber and a component compartment below said chamber, the combination comprising: an air inlet assembly forming an airflow path

into said chamber; an air circulation means removably supported on said air inlet assembly; and support structure including overlapping bracket means on said air inlet assembly and said air circulation means for supporting said air circulation



means, said support structure further including means accessible from within said chamber for operatively locking said air circulation means to said air inlet assembly and to said apparatus.

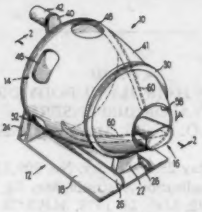
4,195,420
EPISTOTOMY REPAIR MODEL
Sandra Fields, 110-26A 172nd St., Jamaica, N.Y. 11433
Filed Feb. 7, 1974, Ser. No. 440,518
Int. Cl.[2] G09B *23/30*
U.S. Cl. 35—17 **2 Claims**



1. A model for demonstrating teaching and practicing the repair of an episiotomy comprising a fabric cover shaped as a portion of a female torso and limbs including a simulated vagina, stuffing material filling out said fabric cover, a plurality of slit fabric layers forming symmetric edge portions in said simulated vagina along a line of a union of symmetrical parts of a vulva, said fabric layers representing respectively the vaginal mucosa, muscle, fascia and the subcuticular portion of said simmulated vagina, said symmetric edge portions being provided with spaced holes for the passage of needle and catgut therethrough.

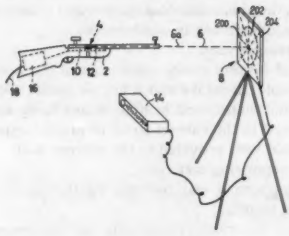
4,195,421
SHAPE MATCHING DEVICE
James E. Tucker, Oak Park, and Burton C. Meyer, Downers Grove, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.
Filed Nov. 6, 1978, Ser. No. 957,971
Int. Cl.[2] G09B *19/00*
U.S. Cl. 35—22 A **10 Claims**

1. A shape matching device, comprising:
a hollow generally symmetrical housing having a wall at one end and an exit aperture at the opposite end;
a circumferential mantle extending axially from said closed end and converging to define said exit aperture;
a plurality of circumferentially spaced apertures in said mantle;
a plurality of blocks associated by shape with the apertures, each block having a cross-sectional dimension and configuration corresponding generally to the configurations and dimensions of one of said apertures so as to resist manual insertion thereof into the hollow housing through all but a complementary shaped one of said apertures;
means for manually rotating said housing; and



guide means in the interior of said housing for directing blocks toward said exit aperture in response to rotation of said housing.

4,195,422
SYSTEM FOR SIMULATING WEAPON FIRING
Hermann Budmiger, Seewen, Switzerland, assignor to Laspo AG, Diessenhofen, Switzerland
Filed Dec. 12, 1977, Ser. No. 859,723
Claims priority, application Switzerland, Dec. 20, 1976, 16225/76; May 27, 1977, 6668/77
Int. Cl.[2] F41F *27/00*
U.S. Cl. 35—25 **24 Claims**

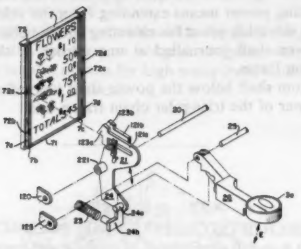


1. A system for simulating firing of a weapon, comprising:
a pulse transmitter capable of being connected with a weapon and serving for transmitting beam pulses;
a target device having a target image plane and co-operating with the pulse transmitter;
a hit display for the target device for displaying target hits;
a calibrated adjustment device provided for the pulse transmitter for adjustment of the beam pulses in order to adjust their hit diameter at the target image plane of the target device to the caliber of the weapon used for simulation firing;
said target device comprising a target image subdivided into target regions;
a detector provided for each target region;
each detector having a sensor responsive to a beam pulse impinging thereat;
each sensor has a surface which is smaller than the correlated target region of the target image;
an optical means arranged between the target image plane and the detector formed by the sensors; and
said optical means serving for the deflection and the proportional size reduction of a beam pulse at the sensors and which beam pulse impinges upon the target image plane.

4,195,423
POP-UP CASH REGISTER

Noriaki Iwao, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan

Filed Aug. 30, 1978, Ser. No. 937,924
Int. Cl.[2] G09B *19/02*
U.S. Cl. 35—30 10 Claims

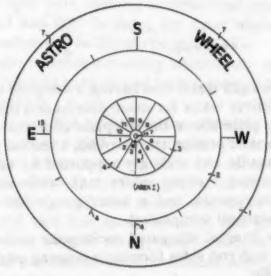


1. An educational toy device comprising:
a base structure;
cover structure associated with said base structure for simulating the general appearance of a cash register;
a support panel structure provided with a channel and a viewing aperture therein mounted vertically upon the base structure;
a plurality of keys mounted on said support panel structure, each of said keys having money equivalent indicia provided thereon;
latching means operable by each key of the plurality of keys;
a program plate for reception in the channel of the support panel structure and depicting thereon items of merchandise with related money equivalent indicia together with a totalization value indicia of all the items so depicted;
precoded means relating to said money equivalent indicia provided on the program plate for engagement by said latching means to permit ringing up of items of merchandise only when one or more of the plurality of keys are depressed corresponding to the correct money value for the particular item of merchandise; and,
traverse means energizable by insertion of the program plate into the channel for effecting movement of the program plate through the channel to permit said precoded means and said latching means to function.

4,195,424
ASTRO-WHEEL

Joyce A. Heath, P.O. Box 1431, Englewood Cliffs, N.J. 07632

Filed Mar. 3, 1978, Ser. No. 883,167
Int. Cl.[2] G09B *29/00*
U.S. Cl. 35—44 6 Claims

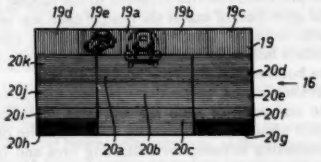


1. A computer for the calculation of detailed horoscopic relationships, the assembly of which forms an "equal house" astrological chart and comprises:
a base disc delineated with concentric circular portions, **1**, **2**, **3** and **6**, one of said circular portion, **1**, having twelve equally-spaced radial lines, **4**, with at least one of said equally-spaced radial lines, **15**, being designated a major axis of the compass and selected from the group consisting of South, North, East and West, one of said circular portion, **3**, having twelve equally-spaced radial lines, **4**, in inlined relationship to said equally-spaced radial line of said 1st mentioned circular portion and defining areas therebetween, said areas being succeedingly designated in counter clock-wise order with numbers, as indicated by **5**, **1** through **12** with the number **12** and **1** being positioned on either side of said radial line corresponding to the radial line, **15**, designated as East;
an overlay disc rotatably positionable on said base disc and having a circular portion corresponding substantially to said base disc, said corresponding circular portion of said overlay disc having twelve equally-spaced radial lines, **9**, defining therebetween areas designated in the accorded order of the zodiac and including 30 equally-spaced degree marks, **12**, **11**, and **9**, with each 5 and 10 value degree being of greater length than the other said degree marks; and
at least one set of symbols, **16**, representing planets and luminaries.

4,195,425
SYSTEM FOR MEASURING POSITION AND/OR VELOCITY

Ludwig Leitz, and Knut Heitmann, both of Wetzlar, Fed. Rep. of Germany, assignors to Ernst Leitz Wetzlar GmbH, Wetzlar, Fed. Rep. of Germany

Continuation of Ser. No. 671,104, Mar. 29, 1976, abandoned, which is a continuation-in-part of Ser. No. 376,418, Jul. 5, 1973, abandoned. This application Jan. 4, 1978, Ser. No. 866,908
Claims priority, application Fed. Rep. of Germany, Jul. 17, 1972, 2235020
Int. Cl.[2] G01P *3/36*; G01C *3/00, 3/08*
U.S. Cl. 356—28 17 Claims



1. In a system for measuring the relative position and/or movement in magnitude and direction of an object being without special optical markers thereon, said object being measured with respect to a reference by using at least an imaging system, at least one grating positioned at least in the vicinity of the image plane of said imaging system and coordinated with at least one measuring direction and photoelectric detectors associated with said grating and generating electrical signals according to light fluxes emanating from said grating, the improvement comprising:
forming by said imaging system in a first and/or at least in a second measuring direction an image each of said object and said reference respectively on said grating in positions spatially separated, said images of said object and said reference differing from one another in image scale and perspective caused by different object distance and different reference distance respectively from said grating;
generating for each measuring direction according to the interaction between said images and said grating electrical A.C. signals, the frequencies of which differ in depen-

dence upon said different image scale and said perspective and being proportional to the relative position and/or movement of said object to be measured; and

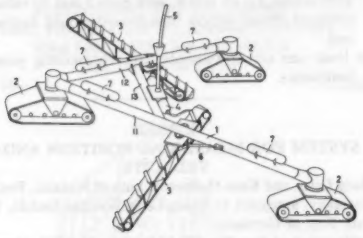
evaluating said electrical A.C. signals by employing the trigonometrical relationships of said image scale and said perspective for producing signals indicating the position and the movement of said object, said trigonometrical relationships of said image scale being defined by the ratio image size/object size, said trigonometrical relationships of said perspective being defined by the depiction of spatially extended objects on a plane surface.

4,195,426

EXTRACTING ORES FROM THE SEA BOTTOM

Valeriano Banzoli, Mestre; Vincenzo Di Tella, and Paolo Vielmo, both of Padua, all of Italy, assignors to Tecnomare, S.P.A., Venice, Italy

Filed Mar. 31, 1978, Ser. No. 892,197
Claims priority, application Italy, Apr. 1, 1977, 84119 A/77
Int. Cl.[2] E02F 7/00
U.S. Cl. 37—60 **3 Claims**



1. A self-propelled vehicle for the extracting of ores from the sea bottom adapted to operate in deep waters comprising:

a substantially "A" shaped tubular structure, having a pair of legs joined at an apex and a cross-member joining said legs at an intermediate point,

a self-propelled crawler mounted to the tubular structure at the apex thereof and at the base of each leg, said crawlers each including integrally mounted drive means and an endless belt driven thereby to propel the vehicle along the sea bottom,

excavating means, perpendicularly mounted at substantially the mid-point of each leg and each including a basket chain arrangement operating in an opposite direction for minimizing stresses, for collecting ores and feeding said ores to a predetermined location intermediate the legs,

a screening and pretreatment unit mounted to the cross member intermediate the legs for receiving the ores from the excavating means, and,

tubular conveying means for elevating the ore to the sea surface, said means being mounted to the pretreatment unit.

4,195,427

CHAIN TRENCHER

Roy S. Lanham, Abilene, Tex., assignor to Lanham Manufacturing Co., Inc., Abilene, Tex.

Filed Jul. 20, 1978, Ser. No. 926,553
Int. Cl.[2] E02F 5/06
U.S. Cl. 37—90 **15 Claims**

1. An excavating machine comprising:

a vehicle frame,

ground engaging wheels located on said frame which support the frame, and facilitate movement of the vehicle frame,

a rigid elevating member having four pivot points thereon, a vehicle pivot,

an elevating pivot,

a chain frame pivot, and

an adjusting pivot,

said elevating member pivoted to the vehicle frame at the vehicle pivot,

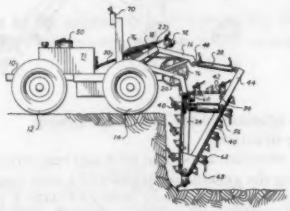
a triangular chain frame pivoted to the chain frame pivot,

an adjusting power means for adjusting the chain frame extending from the adjusting pivot to the chain frame,

elevating power means extending from the vehicle frame to the elevating pivot for elevating the the chain frame,

a power shaft journalled at one corner of the triangular chain frame,

a bottom shaft below the power shaft journalled at another corner of the triangular chain frame, and



a back shaft journalled behind the power shaft and at the third corner of the triangular frame,

said elevating member pivoted to the chain frame at the corner having the power shaft,

said adjusting power means being pivoted to the chain frame near the corner having the back shaft journalled thereto, and

chain means having digging teeth attached thereto trained around said shafts whereby the chain means has

a digging run from the bottom shaft to the power shaft,

a removal run from the power shaft to the back shaft, and

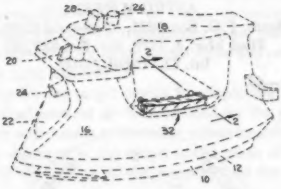
a down run from the back shaft to the bottom shaft.

4,195,428

STEAM IRON WATER GAUGE

Arthur C. Downing, Ontario, Calif., assignor to General Electric Company, New York, N.Y.

Filed Nov. 6, 1978, Ser. No. 958,032
Int. Cl.[2] D06F 75/06
U.S. Cl. 38—77.2 **4 Claims**



1. A lightweight steam iron having a soleplate and means to selectively deliver water for steam distribution therefrom with a first plastic plate above the soleplate coextensive therewith and having a skirt portion therearound, a second plastic housing with a handle and sealingly supported by said plate, the skirt and housing forming water tank walls and enclosing operating components, and a water gauge for said tank, a gauge improvement comprising,

an entirely integral elongated rectangular niche with back, bottom, and end sides forming a housing edge parallel to the handle.

spaced apertures in the back side connecting the interior tank top,

said apertures facing outwardly of the iron body formed by the housing,

an enclosed blow-molded rectangular translucent integral tubular gauge of housing material nested in said niche against all sides completing the edge for a symmetrical outer housing surface,

spaced integrally-formed aperture-aligned tubes projecting from the gauge,

said tubes extending and opening into said tank through said apertures, and

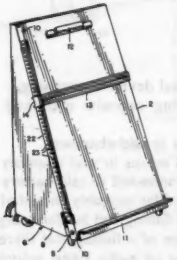
means securing the tubes inside said tank to lock the gauge to said housing and form an integral one-piece water gauge without seals or mastics for high water level visibility with the iron flat and vertical.

4,195,429

ELECTRICALLY OPERATED COPYHOLDER

John F. Wegner, Des Plaines, Ill., assignor to Edanbob Corporation, Franklin Park, Ill.

Filed Jan. 3, 1978, Ser. No. 866,300
Int. Cl.[2] B41J *11/54*
U.S. Cl. 40—356 **2 Claims**



1. An electrically operated copyholder comprising,

(a) a base support member,

(b) a face plate extending upwardly from said base support member adapted to have copy matter supported thereon for viewing and copying by a typist,

(c) a rearwardly extending flange member along at least one side of said face plate and provided with openings adjacent the upper and lower ends thereof,

(d) a motor mounted on said base support member having a rotatable toothed wheel associated therewith and driven thereby,

(e) a flat metallic endless drive belt having perforations therethrough extending around said toothed wheel and through said openings in said flange member, whereby the portion of said drive member between said openings will be exposed and will lie along the outer surface of said flange member and be driven by said motor,

(f) a line guide member extending transversely of said face place and adapted to be moved with respect to the lines on the copy matter,

(g) one end of said line guide member extending rearwardly therefrom and provided with a magnet thereon, and

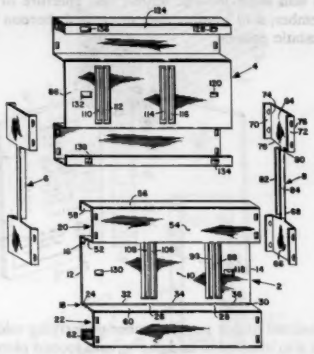
(h) said magnet being in contact with said drive member to support magnetically said line guide member thereon, whereby actuation of said motor will move said drive member and said line guide member, and yet said line guide member may be readily removed from said drive member for manual replacement thereon after completing the downward movement thereof.

4,195,430

DISPLAY WITH MOVABLE INDICIA

James M. Suttles, Elberton, Ga., assignor to Hopeman Brothers, Inc., New York, N.Y.

Filed Oct. 18, 1977, Ser. No. 843,276
Int. Cl.[2] G09F *11/29*
U.S. Cl. 40—518 **9 Claims**



1. A support for use in a movable indicia display in conjunction with self-coiling indicia-carrying sheets of the type comprising an elongated rectangular sheet of self-coiling material coiled at both of its ends whereby each sheet comprises a pair of rolls connected by a substantially planar section, comprising:

first and second substantially identical sheet metal members each having a substantially rectangular planar face on one side thereof and a back on its opposite side, each member having roll retaining means integrally formed on two opposite edges of the face thereof for holding the rolls of a sheet of self-coiling material in spaced relationship to each other, and guide means integrally connected to its face and extending in perpendicular relation to said opposite edges, said guide means comprising a pair of elongated, rectangular, punched-out sheet metal sections lying in a plane spaced from said face, said sections having elongated openings facing in opposite directions and adapted to receive the adjacent edges of a pair of side-by-side coplanar indicia-carrying sheets;

means for storing said first and second members together in back-to-back relationship; and

a pair of end members, each end member being secured to all four of said roll retaining means, and at least one of said end members having means, extending between the opposite ends thereof, for forming guide channels for the edges of a pair of indicia-carrying sheets on opposite sides of the support;

said first and second members being secured together in back-to-back relationship at least in part by slot and tab means.

4,195,431

GRAPHIC DISPLAYS EMPLOYING ELECTROLUMINESCENT PANELS

Eugene S. Neufeld, 200 W. 86th St., New York, N.Y. 10024

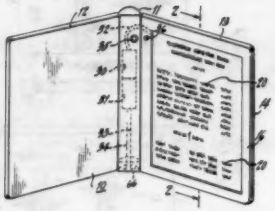
Filed Dec. 12, 1977, Ser. No. 859,833
Int. Cl.[2] G09F *13/22*
U.S. Cl. 40—544 **9 Claims**

1. An illuminated graphic display apparatus, comprising:

(a) a booklet apparatus having a centrally located spine member including a hollow inner chamber, a first thin cover member pivotally coupled to said spine member at a first end and a second thin cover member pivotally coupled to said spine member at said other end, to thus

form a booklet with at least one of said thin cover members of a sleeve configuration having a slit for insertion therein of a series of planar sheets, said surface of said one cover member having a large aperture for exposing to view one of said sheets when inserted in said cover member,

(b) a first planar sheet inserted in said sleeve having located thereon, graphic data to be viewed, said data as positioned on said sheet located within said aperture of said cover member, said graphic data impressed thereon by an electrostatic process,



(c) a second planar panel member underlying said first sheet and also inserted in said sleeve, said second planar member comprising an electroluminescent capacitor adapted to emit light when energized for illuminating the graphic data on said first sheet, and

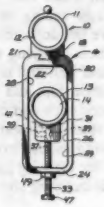
(d) energizing means including an oscillator adapted to provide a repetitive waveform when energized by a battery located in said hollow inner chamber of said spine member for energizing said second planar member to thereby cause the same to emit light.

4,195,432

ADJUSTABLE MEANS TO VARY POINT OF IMPACT OF OVER-AND-UNDER FIREARMS

Jack L. Hickman, 1809 Plaza Way, Walla Walla, Wash. 99362

Filed Aug. 21, 1978, Ser. No. 935,585
Int. Cl.[2] F41C *21/06*
U.S. Cl. 42—1 R **5 Claims**



1. In a double barrel firearm having an upper barrel that is superimposed over a lower barrel, an adjustment means connecting said upper and lower barrels for varying the point of impact of projectiles fired from the lower barrel relative to the line of sight of the firearm, comprising:

an elongated yoke fixed to a muzzle end of the upper barrel and extending downward therefrom;

said elongated yoke having an elongated slot formed by parallel yoke side rails for receiving a muzzle end of the lower barrel therein and for enabling the muzzle end of the lower barrel to slide vertically along the rails within the slot;

adjustment means mounted on the yoke and operatively connected to the lower barrel for manually adjusting the relative position of the lower barrel within the elongated slot to adjust the relative distance between the muzzle ends of the barrels to vary the point of impact of projectiles fired from the lower barrel; and

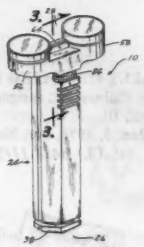
locking means associated with the adjustment screw for manually locking the adjustment screw to hold the lower barrel at a preset vertical position within the yoke slot.

4,195,433

UTILITY SIGNAL DEVICE

Norman R. Engman, Des Moines, Iowa, assignor to Emco Specialties, Inc., Des Moines, Iowa

Continuation-in-part of Ser. No. 858,613, Dec. 8, 1977, Pat. No. 4,155,189. This application Feb. 13, 1978, Ser. No. 877,173
The portion of the term of this patent subsequent to May 22, 1996, has been disclaimed.
Int. Cl.[2] A01K *97/12*
U.S. Cl. 43—17 **1 Claim**



1. A utility signal device comprising,

a housing having opposite ends and a chamber formed therein,

a battery means in said chamber,

an audio signal means in said chamber operatively electrically series connected to said battery means,

a fishing rod holder movably mounted on one end of said housing, said fishing rod holder being adapted to support an end portion of a fishing rod thereon, said fishing rod holder having an audio signal activator portion thereon which is movable into position to complete a circuit with said battery means and said audio signal means in response to a force on said one end portion of said fishing rod,

said fishing rod holder having an electric light means positioned on said housing adjacent said rod holder,

said electric light means comprising first and second electric lights which are positioned on said housing on opposite sides of said rod holder to create lateral restraint means for said fishing rod end portion,

and control switch means including a four-way switch which is mounted on said housing and is electrically connected to said lights and said audio signal means whereby either of said lights may be selectively illuminated independently of one another and independently of said audio signal means and whereby one of said lights and said audio signal means may be actuated by said rod holder.

4,195,434

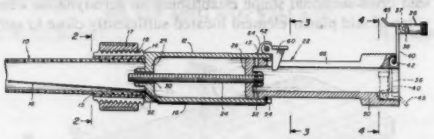
FISHING LINE REEL

Harold N. Neitzke, 4340 Whispering Pines Rd., West Palm Beach, Fla. 33406

Filed Aug. 21, 1978, Ser. No. 935,355
Int. Cl.[2] A01K *89/015*
U.S. Cl. 43—20 **16 Claims**

16. A fishing line reel comprising a tubular housing having fixed substantially axially therein at a first end, a lead screw extending freely toward the second end of said housing, means at said first end to attach said housing to a fishing pole or the like, a spool sized to fit telescopically within said housing threadedly engaged at a first end on said lead screw and means at the second end of said spool to rotate said spool on its axis

thereby to advance said spool into said housing, and means near the second end of said housing to guide a fishing line, when present, onto said spool, whereby on rotation of said



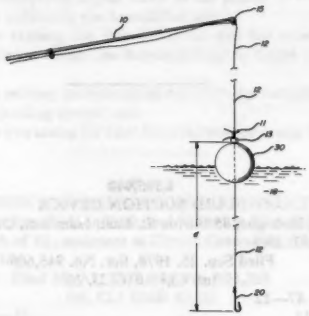
spool to advance it into said housing a fishing line can be reeled on said spool and the line stored on said spool will be within said housing.

4,195,435

FLOAT POSITION ADJUSTMENT APPARATUS FOR FISHING LINE

Fred G. Kern, 534 Bluff, Hutchinson, Minn. 55350

Filed Jul. 3, 1978, Ser. No. 921,744
Int. Cl.[2] A01K *91/06*
U.S. Cl. 43—44.87 **5 Claims**



1. An apparatus for adjustably positioning a float along a fishing line, comprising a friction coil having at least six loops about said line with one end of said coil looped back through said six loops and the other end of said coil fed through the loop created by the looping back of said one end; and means for sliding along said line and contacting said friction coil, comprising an object having a hole therethrough of diameter larger than the diameter of said line and smaller than said friction coil.

4,195,436

APPARATUS FOR TRAPPING CRUSTACEANS

José Moure, 2800 SW. 25 Terr., Miami, Fla. 33133

Filed Aug. 21, 1978, Ser. No. 935,524
Int. Cl.[2] A01K *69/00*
U.S. Cl. 43—100 **8 Claims**

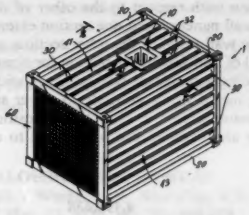
1. A crustacean trap comprising:

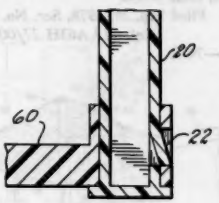
a. a pair of parallel polygonal side panels, one of these panels having a door frame and a door, said panels having a first hole through each corner of each of said panels and a plurality of latch orifices through the inner walls of said first hole extending outwardly,

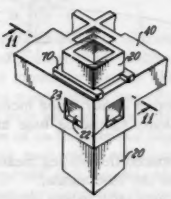
b. a plurality of columns perpendicular to the plane of said pair of parallel side panels said columns being inserted through the respective corner holes of said parallel side panels,

c. a plurality of latches integrally formed on each column end capable of locking in with said latch orifices,

d. a plurality of wooden members parallel to said columns inter-connecting said side panels, thereby forming an enclosure,







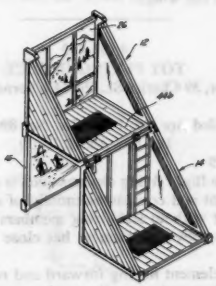
e. a trap mouth attached to said wooden members on one side of said enclosure.

4,195,437

CONVERTIBLE DOLL HOUSE

Marshall Ace, New York, N.Y., assignor to Ideal Toy Corporation, Hollis, N.Y.

Filed Mar. 3, 1978, Ser. No. 883,069
Int. Cl.[2] A63H *33/16, 33/06*
U.S. Cl. 46—21 **11 Claims**



1. A convertible doll house comprising first and second house sections having perpendicularly extending wall and floor panels, said sections being positioned in a first position

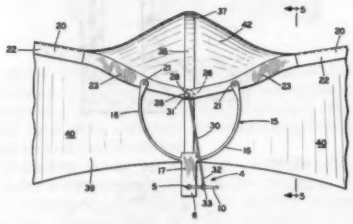
with said wall panels adjacent and pivotally connected to each other and with said floor panels lying in substantially the same plane; and means for supporting one of said sections in a second position with respect to the other of the house sections with the wall panel of said one section extending perpendicularly to the wall panel of the other section; and means on said floor panel of said first house section for simulating a floor and for concealing a simulated wall scene on said floor panel, said simulating means being movable to cover said wall panel of said one house section in said second position to expose said wall scene and convert said wall panel to a simulated floor panel.

4,195,438

ORNITHOPTER CONSTRUCTION

Frank L. Dale, and Leitzel S. Dale, both of 948 Oakhill Dr. NE., Massillon, Ohio 44646

Filed Sep. 26, 1978, Ser. No. 945,838
Int. Cl.[2] A63H *27/00*
U.S. Cl. 46—74 R **15 Claims**



8. An ornithopter construction including:
(a) longitudinally extending base means having front and rear ends;
(b) a pair of spaced flexible leg means mounted adjacent the front end of the base means;
(c) a pair of wing strut means pivotally mounted on the leg means and extending transversely outwardly with respect to the base means;
(d) crank means mounted on the base means and operatively connected to the strut means at respective locations inward of their connections with said leg means;
(e) motor means connected to the crank means for rotating said crank means;
(f) fabric means mounted on the wing strut means forming a pair of wings; and
(g) the wing strut means being adapted to be pivotally moved in unison upon rotation of the crank means by the motor means together with an inward and outward flexing motion of the leg means to provide a uniform flapping motion to the wings.

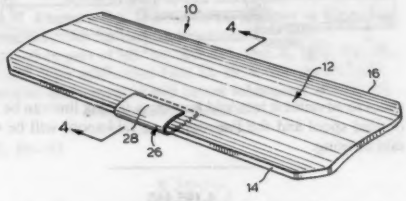
4,195,439

TOY FLYING OBJECT

Dale C. Kramer, 39 Charles St., Port Colborne, Ontario, Canada (L3K 3R3)

Filed Apr. 13, 1978, Ser. No. 896,097
Int. Cl.[2] A63H *27/00*
U.S. Cl. 46—79 **10 Claims**

1. A toy free flight flying object which is substantially non-flexible in flight and consists essentially of a single generally planar element without stabilizing members upstanding from said plane, whereby said element has close to neutral lateral stability,
said planar element having forward and rearward effective parallel edges and generally continuous smooth upper and lower surfaces, said planar element being substantially symmetrical about a centre line extending between said forward and rearward edges and lying within a rectangle,
said planar element having a cross-sectional shape wherein at least the upper surface thereof undulates between said forward and rearward edges with a convex upper surface towards the forward edge and a concave upper surface towards the rearward edge,
said cross-sectional shape establishing an aerodynamic centre of said planar element located sufficiently close to said



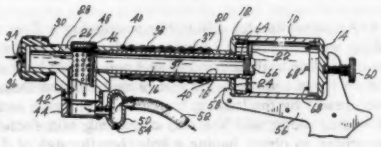
forward edge to impart longitudinal stability to said planar element,
said planar element being weighted towards said forward edge thereof to establish a centre of gravity of said flying object which is located forwardly of said aerodynamic centre.

4,195,440

FLUID SUCTION DEVICE

Wilbrod Rodrigue, 85 Barton St. East, Hamilton, Ontario, Canada L8L 2N1

Filed Sep. 25, 1978, Ser. No. 945,609
Int. Cl.[2] A01G *23/10*
U.S. Cl. 47—12 **5 Claims**



2. A fluid suction device used for collecting gum from fir trees, which gum is enclosed in a thin skin, said device comprising:
(a) a cylinder;
(b) a piston mounted for sliding movement into said cylinder;
(c) a shaft secured to said piston at one end and having a longitudinal bore therein communicating with the vacuum side of said cylinder;
(d) a suction head secured to the other end of said shaft and having a longitudinal bore in communication with the bore in said shaft;
(e) spring means surrounding said shaft for biasing said suction head away from said cylinder;
(f) means for moving said shaft into said cylinder against the action of said spring to create a vacuum at the tip of said suction device to draw fluid into said suction head;
(g) fluid collecting means communicating with the bore of said suction head; and
(h) a knife secured to the tip of said suction head for piercing said skin to collect the gum.

4,195,441

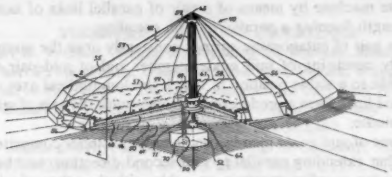
SOLAR GREENHOUSE

Richard E. Baldwin, 8946 Carr St., Broomfield, Colo. 80020

Continuation-in-part of Ser. No. 799,658, May 23, 1977, abandoned. This application Jul. 24, 1978, Ser. No. 927,416

Int. Cl.[2] A01G *9/00;* **F24J** *3/02*

U.S. Cl. 47—17 **24 Claims**



1. Solar heating apparatus comprising:

an air filled enclosure adapted for light transmission therethrough;

a plurality of plants adapted for growing within the enclosure and for producing humidified air within the enclosure by a process of evapotranspiration;

means for supplying liquid water to the plants;

means for collecting the humidified air;

means for cooling the humidified air and for condensing water vapor within the humidified air to liquid condensate;

means for storing the heat extracted from the humidified air by the cooling means; and

means for extracting for heat from the storing means for use.

4,195,442

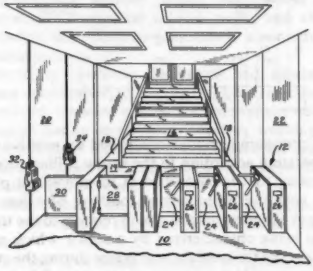
ADMISSION AND EGRESS CONTROL STRUCTURE

Ralph R. Keeling, Richton Park, and Michel F. Seranne, Homewood, both of Ill., assignors to Illinois Central Gulf Railroad, Chicago, Ill.

Filed May 1, 1978, Ser. No. 901,319

Int. Cl.[2] E05B *65/00*

U.S. Cl. 49—35 **11 Claims**



1. An admission and/or egress control structure for separating two areas and regulating the passage of human traffic between the two areas comprising;

a barrier adapted to be disposed between the two areas to be separated;

at least one turnstile in said barrier thru which unassisted, ambulatory humans may easily pass from one area to the other;

at least one gate in said barrier extending to the bottom thereof thru which non ambulatory and assisted ambulatory humans may easily pass from one area to the other;

means mounting said gate for movement between open and closed positions relative to said barrier;

means normally and yieldably urging said gate toward said closed position;

means normally locking said gate in said closed position; and

means for operating said locking means to unlock said gate from said closed position whereby non ambulatory and assisted ambulatory humans may move said gate against said urging means to said open position to pass easily therethrough to move from one area to the other without traversing either said barrier or said turnstile.

4,195,443

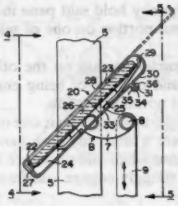
JALOUSIE BURGLAR STOP

Patrick V. Driscoll, 1 Windmill La., New City, N.Y. 10956

Filed Mar. 13, 1978, Ser. No. 886,279

Int. Cl.[2] E06B *7/08*

U.S. Cl. 49—403 **5 Claims**



1. A jalousie burglar stop comprising a clip which is adapted to be installed on the end portion of an existing jalousie panel so as to overlap a panel mounting bracket, the clip includes two flat strips which are connected at one of their ends to a U-shaped channel, each strip has two generally perpendicular spaced flanges along one of its longitudinal edges, the flanges are in juxtaposition with each other and form an opening, which is adapted to cooperate with a panel mounting bracket, the length of the strips are approximately the width of a jalousie panel, a segment extends longitudinally from one strip, the segment has a tab at its end and is adapted to be bent over portions of a panel mounting bracket to form a U-shaped channel and to abut a tab at the other end of the second strip with its tab, the tabs of both strips each has an opening, which is in register with each other when the tabs abut each other.

4,195,444

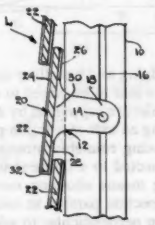
WINDOW PANE LOCKING DEVICE FOR LOUVERED WINDOW STRUCTURES

Rolland R. Cote, 10121 Tabor, Los Angeles, Calif. 90034

Filed Jul. 17, 1978, Ser. No. 925,328

Int. Cl.[2] E06B *7/08*

U.S. Cl. 49—403 **10 Claims**



1. A louvered window structure in which the window panes of the structure cannot be generally unauthorizedly removed therefrom, said structure comprising:

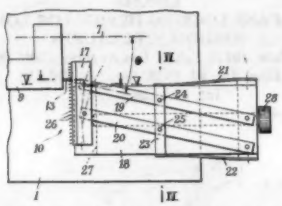
(a) a window frame section having a slot formed therein,
(b) a louvered window pane having an end thereof disposed within said slot,
(c) a clamping device comprising;
(i) a first strip section which is relatively flat across a greater portion of its length,
(ii) a pair of opposed second strip sections which are relatively flat across greater portions of their length, said second strip sections capable of being disposed so that they are generally parallel to said first strip section across said greater portions of their lengths,
(iii) an arcuate end section connecting one of the ends of said first strip section and one of the ends of one of said second strip sections, and another arcuate end section connecting the other of the ends of the first strip section and one end of the other of the second strip sections thereby forming an envelope section disposed over said frame section and engaging a portion or said frame section and a portion of said pane to thereby hold said pane in said slot, and
(iv) a first terminal portion on one of said second strip sections,
(v) a second terminal portion on the other of said second strip sections and capable of being engageable with said first mentioned terminal portion,
(vi) a pair of step portions in at least one of said strip sections to accommodate a next adjacent pane in the louvered window structure when said panes are located in a certain position, or to snuggly engage said frame section and said pane,
(d) said clamping device comprising first looking means on said first terminal portion and second cooperating locking means on said second terminal portion for locking said terminal portions together to thereby lockably hold said pane in the slot of said frame section, said first locking means and second cooperating locking means being non-releasably lockable and operating in such manner that they provide for adjustment of the size of said envelope section.

4,195,445

MACHINE FOR EDGING AND BEVELLING OPHTHALMIC LENSES

Pierre Bardonnet, Montgeron, France, assignor to Essilor International (Compagnie Generale d'Optique) Societe Anonyme, Cretail, France

Filed Jul. 19, 1978, Ser. No. 926,110
Claims priority, application France, Jul. 20, 1977, 77 22223
Int. Cl.[2] B24B 9/14
U.S. Cl. 51—101 LG **11 Claims**



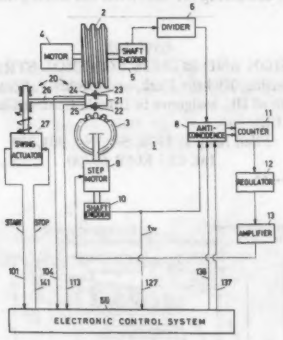
1. In a machine for edging and bevelling ophthalmic lenses, in which a templet and a lens to be edged in accordance with the contour of said templet are supported by a spindle rotating at a low speed and having an axis of rotation parallel to a fixed direction, said spindle being rotatably mounted in a movable carrier operatively connected to a frame structure of the machine through coupling means allowing movements of said carrier both in a first direction parallel to said fixed direction and in a second direction perpendicular to said first direction, a feeler carried by the frame structure and cooperating with said templet to limit the penetration of a grinding wheel carried by the frame structure and rotating at a high speed into the edge of the lens, and in which guide means are provided for guiding the movements of said movable carrier in accordance with a predetermined curvature, said guide means comprising a guide member carried by said frame structure and a bearing member carried by said movable carrier urged for engagement with said guide member, one of said guide member and bearing member being adjustable in said first direction, the improvement comprising:
(a) the guide member is connected to the frame structure of the machine by means of a pair of parallel links of same length forming a parallel motion coupling,
(b) a pair of antagonistic springs constantly urge the assembly consisting of said guide member and of said pair of links to a stable position in which the longitudinal axes of said links form a predetermined angle with the axis of said spindle;
(c) one of said guide member and bearing member comprises a bar extending parallel to said second direction, said bar having coupling means engageable with the other of said guide member and bearing member for preventing any relative movement between the guide member and the bearing member in said second direction.

4,195,446

APPARATUS FOR THE CONTROL OF A TOOL IN A GEAR PROCESSING MACHINE

Arthur Angst, Wil, Switzerland, assignor to Reishauer AG, Zurich, Switzerland

Filed Sep. 28, 1978, Ser. No. 946,469
Claims priority, application Fed. Rep. of Germany, Oct. 4, 1977, 2744562
Int. Cl.[2] B24B 49/08
U.S. Cl. 51—105 GG **6 Claims**



1. A gear processing grinder controlled by positive movement and operating according to the screw rolling process in which a rotating tool is controlled in its movement prior to engagement with the preprocessed toothing of a workpiece gear rotating at a predetermined rate in relation to the tool, the improvement being characterized by a sensor which may be moved between the tool and the workpiece during the running of said tool or workpiece prior to engagement of the tool and workpiece, said sensor having at least one pair of nozzles for the tool and the workpiece for the pneumatic measurement of differential pressure, whereby each pair of said nozzles comprises an adjustable reference nozzle and a measuring nozzle alignable with the tool or the workpiece, means for producing an electric signal corresponding to the measured differential pressure, by a recognition circuit coupled to the measuring nozzles for recognizing the spaces of the tool and teeth of the workpiece moving past the calibrated nozzles, a first logical circuit coupled to the recognition circuit, switching means coupled to the logical circuit for the production of measuring pulses the frequency of which is higher than the frequency of successive tooth or speed spacings, a counter for the algebraic summation of the measuring pulses by the logical circuit in

dependence on the output signals of the recognition circuit connected to the output of the first logical circuit and, a second logical circuit for producing corrective signals in forward and backward direction produced in accordance with content of the counter.

4,195,447

VIBRATION ABRASIVE CONTAINER

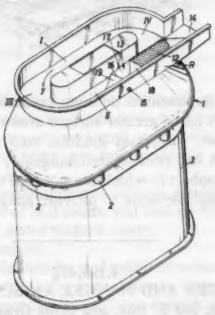
Carl K. Walther, Wuppertal; Henning D. Walther, Haan; Hubert P. Hageluken, Dusseldorf, and Karl Temme, Wuppertal, all of Fed. Rep. of Germany, assignors to Carl Kurt Walther GmbH & Co. KG, Wuppertal, Fed. Rep. of Germany

Filed May 3, 1978, Ser. No. 902,484

Claims priority, application Fed. Rep. of Germany, May 14, 1977, 2721943; May 14, 1977, 2721944; May 14, 1977, 2721945; Jan. 12, 1978, 2801180; Mar. 20, 1978, 2812070

Int. Cl.[2] B24B *31/00*

U.S. Cl. 51—163.2 **12 Claims**



1. A channel formed vibration abrasive container comprising

walls including sides and a bottom forming a channel and defining a complete stadium shaped channel course of unperforated form,

at least one vibration generator centrally disposed relative to said complete stadium shaped channel and vibratingly operatively connected to said walls, said channel surrounding said vibration generator in a non-circular longitudinal course,

a selectively operative discharge- and separation-means being coordinated to said channel for selectively passing container contents unimpeded throughout said complete channel during an abrasive vibratory working phase and selectively for discharging and separation passage thereover only when actuated to then stop complete circulation through said channel,

said walls defining the channel course comprising two pure 180° curved arcs disposed opposite each other at a distance,

said curved arcs being arranged in symmetrical position relative to said vibration generator, and

said walls defining the channel course further comprising two parallel extending linear channel sections connecting smoothly said curved arcs with each other.

4,195,448

TWO-POINT CONTACT STEADY REST FOLLOWER

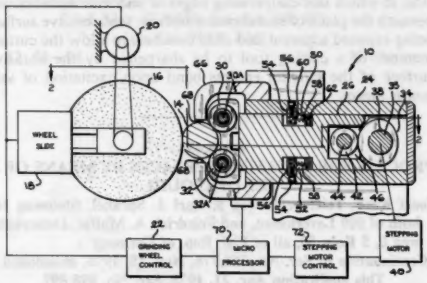
John M. Check, Chelsea, and Gary F. Rupert, Ann Arbor, both of Mich., assignors to Raycon Corporation, Ann Arbor, Mich.

Filed May 15, 1978, Ser. No. 905,405

Int. Cl.[2] B24B *49/02, 41/06*

U.S. Cl. 51—165.77 **3 Claims**

1. A steady rest follower for supporting a workpiece as material is removed therefrom by a work performing tool, said steady rest follower comprising a frame, a slide movably mounted on said frame for movement toward and away from said workpiece, bias means connected to said frame and said slide urging said slide away from said workpiece, a pair of workpiece engaging members mounted on said slide at relatively fixed positions, gauge means operable to monitor the size of said workpiece and generate a signal representative of the size of said workpiece, drive means for moving said slide transversely of said workpiece to a position in which said workpiece engaging members engage the upper and lower lateral portions of said workpiece on the side of said workpiece opposite the side engaged by said tool, said drive means comprising a drive member rotatably mounted on said frame, a curved contact member mounted on said slide in direct contact with



said drive member, said drive member having an eccentric portion with an axis of rotation extending transversely with respect to the direction of movement of said slide, motor means operable to rotate said drive member about its axis to move said slide toward and away from said workpiece in cooperation with said bias means, and control means operatively associated with said gauge means and said motor means so that in response to a signal indicating a decreasing workpiece size from said gauge means said control means provides for the operation of said motor means to rotate said drive member to advance said slide toward the workpiece to maintain a controlled support force against the workpiece by said workpiece engaging members as the size of said workpiece is reduced.

4,195,449

PORTABLE CUTTING-TOOL SHARPENER

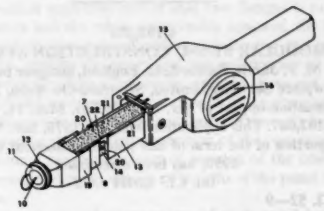
Annamaria Scarpa, and Franco Zanobini, both of Via Mameli 25, San Vincenzo, Italy

Continuation of Ser. No. 768,317, Feb. 14, 1977, abandoned. This application Oct. 30, 1978, Ser. No. 956,003

Claims priority, application Italy, Apr. 6, 1976, 17406 A/76

Int. Cl.[2] B24B *23/06*

U.S. Cl. 51—170 EB **5 Claims**



1. A portable cutting-tool sharpener, for sharpening cutting members of cutting tools, comprising a box-type housing having an enlarged central portion and two aligned straight sections extending from opposite sides of said central portion; motor means within said central portion and including a driven roller; a pair of spaced, parallel frame plates secured to one of

said straight sections to define a channel having a longitudinal axis; a fork member movably connected to said frame plates and movable parallel to said longitudinal axis; an idler roller supported by said fork member; an endless band having an abrasive surface and mounted by said idler roller and said driven roller to be driven by said driven roller in the direction of the longitudinal axis; a pair of slide members within said channel and slidably mounted on said frame plates for sliding movement between a first position, in which said slide members extend above the plane of said abrasive surface with one edge of a first one of said pair of slide members cooperating with one edge of the other of said pair of slide members to define a plane providing support for a cutting tool during sharpening of the cutting member thereof, and a second position, in which said cooperating edges of said slide members are beneath the plane of said abrasive surface; said abrasive surface being exposed adjacent said slide members to allow the cutting member of a cutting tool to be sharpened by the abrasive surface of the moving endless band upon excitation of said motor means.

4,195,450

PROCESS FOR TREATING SURFACES BY MEANS OF A JET OF LIQUID

Josef Korb, Teitscheiderweg 5; Karl J. Sprakel, Steinweg 18, both of 509 Leverkusen, and Friedrich A. Muller, Osterriethweg 6, 5 Koln 50, all of Fed. Rep. of Germany

Continuation of Ser. No. 741,776, Nov. 15, 1976, abandoned. This application Apr. 21, 1978, Ser. No. 898,897

Claims priority, application Fed. Rep. of Germany, Nov. 18, 1975, 2551713

Int. Cl.² B24C *1/00*

U.S. Cl. 51—319 **4 Claims**

2. A process for treating a surface, comprising the steps of discharging onto one portion of the surface to be treated a jet of flowable material under a predetermined pressure, at least a portion of said jet upon contacting said one portion of the surface being reflected from said one portion and thus forming a stream directed away from said one portion of the surface; and conducting the surface to be treated so as to form such a configuration thereof that said stream is directly intercepted at least once by another portion of the surface right after said portion of the jet is reflected by said one portion of the surface.

4,195,451

MODULAR STAND CONSTRUCTION SYSTEM

Barry M. F. Jarvis, Snitterfield, England, assignor to Exhibition Showplace Services Limited, Stratford-On-Avon, England

Continuation-in-part of Ser. No. 776,723, Mar. 11, 1977, Pat. No. 4,102,087. This application Mar. 28, 1978, Ser. No. 890,926

The portion of the term of this patent subsequent to Jul. 25, 1995, has been disclaimed.

Int. Cl.² E04H *3/12*

U.S. Cl. 52—9 **13 Claims**

1. A modular stand construction system comprising:

a support frame;

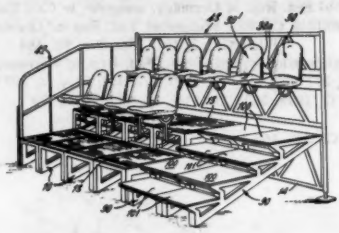
support means on said support frame to be spaced from a surface on which said system rests;

at least one floor-carrying member;

floor means mounted on said floor-carrying member;

connecting means adjacent a rear end of said floor-carrying member locatable on said support means to position said rear end substantially horizontally, said floor-carrying member having its front end arranged to be supported directly by the surface or by support means of a further support frame to be arranged at a lower level than the support means of the first said support frame;

at least one collapsible seat coupled to said floor means, said collapsible seat being engaged with said floor means when in an erect position and being movable from the erect position to a stowed position beneath said floor means; and



a modular step member defining a plurality of steps, one step of which has a greater surface area than the area of the next lower step, said modular step member being employed in said system interchangeably with said floor-carrying members to which are mounted said floor means and said collapsible seats to provide gangways between said seats.

4,195,452

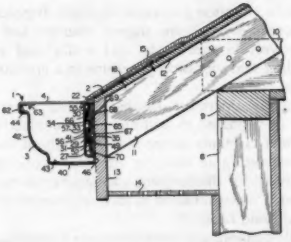
GUTTER AND HANGER ARRANGEMENT

Truman Smith, 803 E. 13th, and Clyde Grayum, 1500 Mitchell, both of Oak Grove, Mo. 64075

Filed Feb. 2, 1979, Ser. No. 9,391

Int. Cl.² E04D *13/04*

U.S. Cl. 52—11 **6 Claims**



1. A gutter and hanger structure comprising:

(a) an elongated roof gutter having a bottom wall and inner and outer side walls forming a trough therebetween, said inner wall having an upper edge portion and a flange connected thereto and extending downwardly in spaced relation to said inner wall;

(b) an elongated hanger member having a fascia wall with upper and lower portions and a flange connected to said lower portion and extending upwardly in spaced relation to said fascia wall;

(c) means connected to said fascia wall for securing same to a building adjacent a roof edge;

(d) said flange on the inner side wall of the gutter extending between and in contact with the flange and fascia wall of the hanger member, said gutter flange and hanger flange having longitudinally extending interlocking longitudinally slideable corrugations for securing the gutter to the

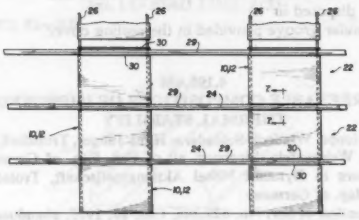
hanger member and inhibiting relative upward movement of the gutter.

4,195,453

MODULAR, MULTI-FLOOR BUILDING

August E. Komendant, 205 Highland Ave., Upper Montclair, N.J. 07043

Filed Nov. 9, 1977, Ser. No. 850,111
Int. Cl.[2] E04H *1/04*
U.S. Cl. 52—79.13 7 Claims



1. In a modular, multi floor building comprising:
(a) a plurality of horizontal continuous concrete slabs between which rooms are arranged as architecturally required, said rooms being cast from concrete as independent, rigid units, and
(b) a plurality of vertical posttensioning tendons passing through the walls of said rooms and said slabs to posttension the building into structural unity,
the improvements wherein:
(c) said rooms are defined by a plurality of semi-boxes, said semi-boxes being basically rectangular in shape, comprising mutually perpendicular walls or front frames but no floor or ceiling, and
(d) said horizontal slabs are posttensioned to unity in the horizontal plane.

4,195,454

ROOF STRUCTURE

Reinhold Sauder, 7315 8th Ave., Regina, Saskatchewan, Canada

Filed May 11, 1978, Ser. No. 904,898
Int. Cl.[2] E04B *7/04*
U.S. Cl. 52—92 5 Claims

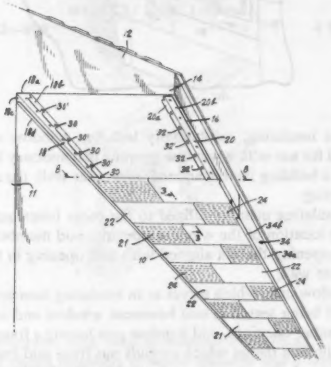
1. A roof structure of the type including a plurality of elongated, generally rectangular wooden beam members each having a top face, a bottom face, two side faces and two end faces, longitudinal channel means in at least one of said side faces for receiving an end edge portion of a roofing panel member, at least a major portion of the length of said channel means extending at an acute angle with respect to the elongation of said beam member, said channel means being of the type of a wavy groove extending generally centrally and longitudinally of the respective side face of the beam member, said structure further comprising a plurality of generally identical roofing panels each having two side edges and two end edges, said end edges being received in said channel means; each of said roofing panels further having surface means extending between said edges to form the surface of said panel; said end edges of each of said panels being curved to generally correspond to the shape of at least a portion of the length of the respective wavy groove, said side edges being generally straight and extending between respective ends of said end edges, whereby said surface means is of a convaco-convex shape, wherein each of said panels gradually decreases in thickness in the direction from one of said side edges to the other, whereby the thickness of one side edge is less that that of the other, the shape of said channel means being generally complementary with the shape of said plurality of the roofing panels at the respective end edges thereof.

4,195,455

ADJUSTABLE SOFFIT SYSTEM

Alexander A. Chalmers, Warren, and J. Lynn Gailey, Newton Falls, both of Ohio, assignors to Alcan Aluminum Corporation, Cleveland, Ohio

Filed May 17, 1978, Ser. No. 906,874
Int. Cl.[2] E04B *7/00*
U.S. Cl. 52—94 11 Claims



1. A soffit system comprising
(a) a plurality of panels of individually adjustable length disposed in side-by-side parallel array and
(b) means for supporting the array of panels,
(c) each of said panels comprising at least first and second panel components arranged in tandem with one end portion of one of said first and second components inserted within one end portion of the other such that the last-mentioned end portions of the first and second components overlap, the extent of overlap thereof being adjustable for adjusting the panel length,
(d) each of said components being made of resiliently deformable sheet material and having a planar horizontal web and opposite sides bent upwardly to form two parallel longitudinal flanges both having conformingly curved profiles of C-shaped continuous curvature oriented in the same direction such that one of said two flanges is externally convex and the other is externally concave, the first and second components of each panel having the same orientation, and the flanges of said one end portion of said one component being nestingly gripped between the flanges of said one end portion of said other component for enabling their last-mentioned end portions to be secured together at any relative position of the two components within a range of extents of overlap of the components corresponding to a range of lengths of the panel they comprise,
(e) said first and second components of each panel having substantially identical cross-sectional dimensions, the flanges of said first and second components all having substantially identical radii of cross-sectional curvature, and the externally convex flange of each of said components being smoothly continuous with the planar web thereof, such that one end portion of either of said first and second components is snap-fittingly insertable into one

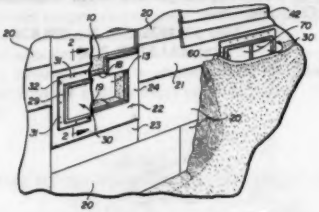
end portion of the other of said first and second components.

4,195,456

INSULATED BASEMENT WINDOW ASSEMBLY

John S. Hickman, Milwaukee, and Andrew P. Jensen, Madison, both of Wis., assignors to Capital Steel & Supply Co., a Division of Jensen Investment Corp., Madison, Wis.

Filed Oct. 20, 1977, Ser. No. 844,100
Int. Cl.[2] E06B 3/00
U.S. Cl. 52—208 13 Claims



1. An insulating, substantially leak-free window assembly adapted for use with a window opening in a masonry basement wall of a building having an inner and outer wall, the assembly comprising:

an insulating member affixed to the outer basement wall at the location of the window opening, said member having an opening therein aligned with said opening in the basement wall;

a window unit, which serves as an insulating membrane, said unit being seated in said basement window and insulating member openings; said window unit having a frame which includes a flange which extends out from said frame, said flange being seated against said insulating member; thereby seating said window unit in said opening free from contact with said outer wall and,

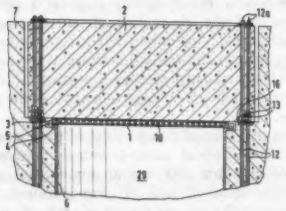
fastening means for fastening said window unit in said openings whereby said flange seats against said insulating member whereby heat losses between said inner and outer wall at the location of said window unit are reduced.

4,195,457

CLOSURE DEVICE FOR PRESSURE VESSELS

Günter, Kissling, Hemsbach, and Erich Filser, Oberkirchen, both of Fed. Rep. of Germany, assignors to Hochtemperatur-Reaktorbau GmbH, Cologne, Fed. Rep. of Germany

Filed Mar. 10, 1978, Ser. No. 885,376
Claims priority, application Fed. Rep. of Germany, Mar. 12, 1977, 2710859
Int. Cl.[2] B65D 53/00
U.S. Cl. 52—224 16 Claims



1. A closure combination for pressure vessels, comprising:

a carrier cover in contact with

a sealing cover for covering and closing an opening in a pressure vessel by contact with a flange member of

a liner element disposed within the opening in the pressure vessel and sealed by

a sealing means in communication with the flange member and the sealing cover, the sealing means comprising a weld lip seal disposed at the circumference of the flange member and welded to the flange member and the sealing cover,

tendons extending through the depth of the carrier cover into walls of the pressure vessel and holding the carrier cover in contact with the pressure vessel, and

a seal disposed in

an annular groove provided in the sealing cover.

4,195,458

HARDENABLE COMPOSITIONS OF IMPROVED THERMAL STABILITY

Walter Hoppe, Windeck-Schladern; Hans Jünger, Troisdorf, and Franz Weissenfels, Siegburg, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Continuation of Ser. No. 622,348, Oct. 14, 1975, abandoned, which is a division of Ser. No. 546,832, Feb. 3, 1975, Pat. No. 4,036,798. This application Mar. 10, 1977, Ser. No. 776,557
Claims priority, application Fed. Rep. of Germany, Feb. 14, 1974, 2406992
Int. Cl.[2] C08K 3/40
U.S. Cl. 52—234 21 Claims

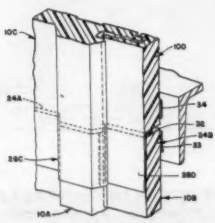
1. A building structure having an exterior wall, said exterior wall containing a hardened composition, said composition comprising a quartz sand material and 1 to 30 weight percent of glass powder and 1 to 20 weight percent, based upon the weight of said material, of a hardenable thermo- or cold-setting phenolic resin.

4,195,459

FOUR CORNER WALL PANEL JOINT

John W. Anderson, Bradford Woods, Pa., assignor to H. H. Robertson Company, Pittsburgh, Pa.

Filed Aug. 9, 1978, Ser. No. 932,331
Claims priority, application Spain, Aug. 27, 1977, 230.788[U]
Int. Cl.[2] E04B 2/72; E04C 2/26, 2/34; E04B 1/68
U.S. Cl. 52—394 4 Claims



1. A four corner joint between upper wall panels having lower ends secured to a structural member and lower wall panels having upper ends secured to the same structural member; each of said wall panels comprising outer and inner sheet metal skins connected by an insulating core and having marginal connecting means formed along the opposite longitudinal edges of the outer sheet metal skins; the outer and inner sheet metal skins and the core coterminate at said upper ends of said lower wall panels, the inner sheet metal skin and the core coterminate at said lower ends of said upper wall panels and confront said upper ends of said lower wall panels, the outer sheet metal skins of said upper wall panels having lapping ends extending beyond said lower ends of said upper wall panels and overlapping said lower wall panels, and said marginal

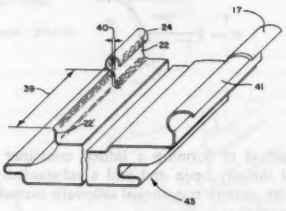
connecting means being substantially entirely removed along the length of said lapping ends to preclude interfering with the interconnection of the corresponding marginal connecting means of said lower wall panels.

4,195,460

INSULATED ROOF PANEL

John W. Anderson, Bradford Woods, and Robert G. Lindner, Sewickley, both of Pa., assignors to H. H. Robertson Company, Pittsburgh, Pa.

Filed Aug. 9, 1978, Ser. No. 932,359
Claims priority, application Spain, Aug. 27, 1977, 230,626
Int. Cl.[2] E04D *3/362, 3/35*
U.S. Cl. 52—528 **7 Claims**



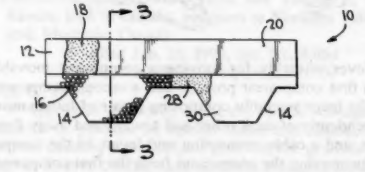
1. An insulating roof panel comprising an inner skin, an outer skin, and an insulating core securing the inner skin in shear-transferring relation to the outer skin; and said inner skin including a central inner web and complementary mating elements formed along the opposite longitudinal edges thereof; said outer skin including a central outer web having first and second upstanding sidewalls extending upwardly from the opposite longitudinal edges of said central outer web, and first and second marginal connecting means formed along the upper edges of said first and second sidewalls, one of said connecting means comprising a rib comprising a segment of a cylinder and having a lengthwise opening presented between a free edge of said rib and one of said upper edges, said lengthwise opening facing said central upper web, the other of said connecting means comprising an arcuate open loop extending away from said central outer web and having an in-turned terminal portion extending toward the plane of said central web and disposed at a level above said rib, said arcuate open loop being configured to receive the rib of an adjacent panel and to be bent about the free edge thereof thereby to provide a weathertight joint.

4,195,461

ROOFING SHINGLE

Eyvind M. Thiis-Evensen, Eidanger, Norway, assignor to Isola Fabrikker A/S, Eidanger, Norway

Continuation-in-part of Ser. No. 893,974, Apr. 6, 1978. This application Oct. 19, 1978, Ser. No. 952,731
Claims priority, application Norway, Jun. 1, 1978, 781918
Int. Cl.[2] E04D *1/28*
U.S. Cl. 52—557 **13 Claims**



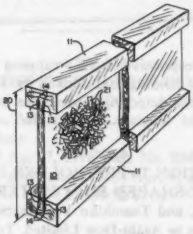
1. A roofing shingle comprising a web having at least one tongue, the top surface of the web having a pattern which simulates roofing slate or roofing tiles, the bottom surface of the web having a monolayer of particulated material having a diameter of at least 1 mm covering at least the tongue and a portion of the remainder of the web and a stiffening layer of material over at least one portion of the web covered by the monolayer.

4,195,462

FABRICATED WOOD STRUCTURAL MEMBER

James R. Keller, Tualatin, and William A. Nickerson, Portland, both of Oreg., assignors to Wood I Systems, Inc., Portland, Oreg.

Continuation-in-part of Ser. No. 809,176, Jun. 23, 1977, Pat. No. 4,123,315, which is a continuation-in-part of Ser. No. 743,532, Nov. 5, 1976, Pat. No. 4,074,498, which is a continuation-in-part of Ser. No. 558,350, Mar. 14, 1975, Pat. No. 3,991,535. This application Apr. 24, 1978, Ser. No. 899,153
The portion of the term of this patent subsequent to Nov. 16, 1996, has been disclaimed.
Int. Cl.[2] E04C *3/02*
U.S. Cl. 52—690 **4 Claims**



1. A structural load bearing member comprising a pair of elongated chord members of wood material and a web interconnecting said chord members by means of glued tongue and groove joints, said joints comprising a pair of parallel, spaced apart bendable tongues on two opposite edges of said web and a pair of longitudinal grooves in each of said chord members spaced apart to receive said tongues, said grooves in each chord member being inclined from top to bottom relative to each other to bend said tongues out of parallelism with each other and form a selflocking dovetail-type joint when said chord members are pressed onto said web tongues, said joints holding said web and chord members together in assembled relation without external clamps while said glue in said joints is setting; said web comprising a particleboard structural panel formed of bonded, interleafed, elongated thin wood flakes, with the grain of the wood in each flake running longitudinally of the flake, said flakes being disposed in random orientations substantially parallel with the plane of the panel, the thickness of each flake being small in relation to the thickness of said tongues and the width of said tongues being small in relation to the length of said flakes whereby each tongue contains many layers of said flakes and a major proportion of said flakes in each tongue is bent across the grain of the wood when the tongues are pressed into said inclined grooves.

4,195,463

COIN WRAPPER DISCHARGE ASSEMBLY

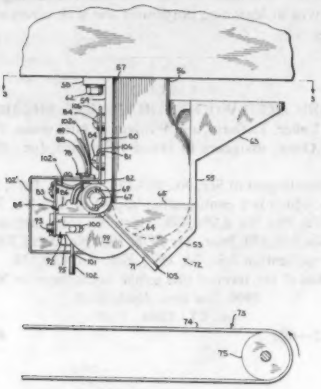
Charles T. Bergman, and Robert L. Zwieg, both of Watertown, Wis., assignors to Brandt, Inc., Watertown, Wis.

Filed Nov. 6, 1978, Ser. No. 957,900
Int. Cl.[2] B65B *57/12*
U.S. Cl. 53—52 **9 Claims**

1. In a coin wrapping apparatus for wrapping a stack of coins into a coin roll, a discharge assembly comprising:

a chute disposed beneath said coin wrapping apparatus adapted to accept a coin roll;

a swingable door normally closing said chute to define a trap for said coin roll;



release means responsive to the wrapping of a stack of coins for releasably holding said door in its closed position; and sensing means for detecting loose coins in said trap.

4,195,464

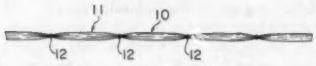
VACUUM SUCTION TYPED HOLDER FOR FLEXIBLE, TUBE-SHAPED FILM MATERIALS

Hisao Kai, Chiba, and Tomohiko Yoshimatsu, Tokyo, both of Japan, assignors to Asahi-Dow Limited, Tokyo, Japan

Division of Ser. No. 826,835, Aug. 22, 1977. This application Aug. 9, 1978, Ser. No. 932,365

Int. Cl.[2] B65B *43/34*

U.S. Cl. 53—386 **3 Claims**



1. Apparatus for holding a section of flexible tube-shaped film material in an expanded condition, packaging said flexible tube and then causing the packaged tube to release under the force of gravity, said section of flexible tube shaped film material having two ends, one of which is open and the other of which is closed, said apparatus comprising:

a substantially vertically arranged double-walled tube member open-ended at both ends thereof, said tube member having a cylindrical outer wall and a cylindrical inner perforated wall spaced inwardly from said outer wall, said outer and inner walls defining an annular chamber therebetween;

end sealing members at each opposite end of said annular chamber for closing off said opposite ends of said annular chamber; and

means coupling said annular chamber to a source of vacuum;

said cylindrical perforated inner wall including a cylindrical layer of flexible foamed open-cellular material which is located over the inner surface of said inner cylindrical perforated wall and against which an expanded tube-shaped film material is adapted to bear for retaining said tube-shaped film material;

whereby a tube-shaped film material is received at the upper open end of said tube member with its sealed end at the bottom, the film material is expanded under the influence of said vacuum and retained against said flexible foamed open-cellular material and filled from the top, and then released by reduction of said vacuum to drop out of the bottom of said tube member under the influence of gravity.

4,195,465

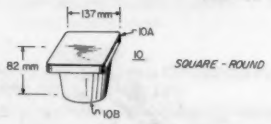
ROUND CONTAINERS WITH SQUARE TOPS AND METHOD AND APPARATUS FOR PRODUCING SAME

Henk Stokkers, Groenlo, Netherlands, assignor to Maryland Cup Corporation, Owings Mills, Md.

Filed Apr. 27, 1978, Ser. No. 900,743

Int. Cl.[2] B65B *3/02*; B67B *3/22*

U.S. Cl. 53—443 **7 Claims**



1. The method of forming a lidded container having a square-lidded initially open end and a substantially circular closed end with smooth transitional sidewalls extending therebetween, comprising:

providing a frusto-conical container open at one end and having a frusto-conical sidewall;

deforming said sidewall of said container adjacent the open end thereof into a square configuration by forcing the said container through a support surface having a square port defined therein:

placing a square configured lid on said container over and conformed with the said deformed open end thereof while said container is held in said square port to close said open end and maintain the square configuration of said open end with said lid; and

removing said container with said lid thereon from said square part in said support surface.

4,195,466

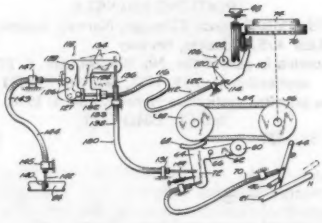
MULTI-FUNCTION INTERLOCK SELF-PROPELLED LAWN MOWER WITH BLADE CLUTCH

Richard A. Heismann, Knoxville, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed May 10, 1978, Ser. No. 904,525

Int. Cl.[2] A01D *75/20*

U.S. Cl. 56—10.5 **16 Claims**



14. A lever assembly for moving a component movable between a first component position and a second component position, the lever assembly comprising a pair of levers movable independently of each other and toward and away from each other, and a cable connecting said levers to the component and for moving the component from the first component position to the second component position when said levers are moved away from each other, said cable including an outer member with first and second ends and an inner member slid-

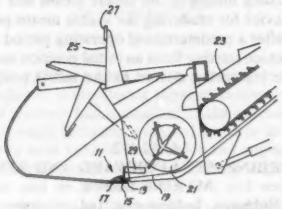
able in said outer member and having first and second ends respectively adjacent said first and second ends of said outer member, one of said first ends being connected to one of said levers, the other of said first ends being connected to the other of said levers, and one of said second ends being connected to said movable component.

4,195,467

HARVESTING MACHINES

Ernest R. Lawrence, and Thomas L. Bradley, both of Morawa, Australia, assignors to Robert George Frean, Lesmurdie, Australia

Filed Dec. 19, 1977, Ser. No. 862,136
Claims priority, application Australia, Dec. 20, 1976, PC8544
Int. Cl.[2] A01D *75/00*
U.S. Cl. 56—296 **6 Claims**



1. An improvement to a harvesting machine where the harvesting machine comprises a cutter having a path of feeding movement, said cutter comprising first and second cutting members each having respective cutting edges, said cutting members being mounted on the harvesting machine for reciprocatory movement of said cutting members relative to each other between a non-cutting position wherein said cutting edges define at least one opening into which material to be harvested moves as said cutter traverses said path of feeding movement and a cutting position wherein said cutting edges cooperate to cut said material, said improvement comprising feeding means for moving material which has been cut by said cutting edges in a direction having a component opposite to said path of feeding movement, said feeding means comprising at least one planar strip of flexible material, and means for fixing each strip at a point thereon relative to one of said cutting members for movement therewith, each said strip having a cantilevered portion extending from said point, each said strip having sufficient resilience to effect flexure of said cantilivered portion about said point upon relative movement of said cutting members for sweeping a path having a component perpendicular to the direction of relative movement of said cutting members and opposite to said path of feeding movement for feeding material cut by said cutting edges in a direction having a component opposite to said path of feeding movement.

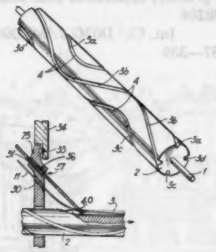
4,195,468

METHOD AND APPARATUS FOR USE IN THE ASSEMBLY OF OPTICAL CABLES

Frederick D. King, Smiths Falls, and Tomasz S. Swiecicki, Kanata, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Jan. 22, 1979, Ser. No. 5,094
Int. Cl.[2] D02G *3/44*; D01H *13/04*
U.S. Cl. 57—9 **16 Claims**

1. Apparatus for laying dielectric optical waveguide into a filament to produce an optical cable, said filament having a surface defining a plurality of grooves, the grooves each having the form of a helix, each said helix changing hand along the filament, the apparatus comprising a plurality of dielectric optical waveguide stores fixedly located around a feedpath for the filament, a reciprocally rotatable guide means located radially outwardly of said feedpath for guiding individual dielectric optical waveguides from respective stores to respective grooves and a locating device for positioning individual



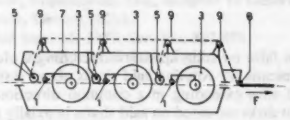
dielectric optical waveguides into said grooves, the apparatus further comprising means for inhibiting introduction of tension in the dielectric optical waveguides as they are positioned in said grooves.

4,195,469

METHOD AND DEVICE FOR PRODUCING METALLIC CORDS

Luciano Tarantola, Milan, Italy, assignor to Industrie Pirelli S.p.A., Milan, Italy

Filed Apr. 7, 1978, Ser. No. 894,522
Claims priority, application Italy, Apr. 8, 1977, 22266 A/77
Int. Cl.[2] D07B *3/00*
U.S. Cl. 57—311 **10 Claims**



1. In a method for making metal cords adapted to be used for reinforcing elements in elastomeric structures, starting from at least one group of two or more metal wires, wound up on one or more feeding bobbins, said metal wires being individual metal wires or strands of wires stranded together, said method comprising the successive steps of:

applying to said wires a force capable of unwinding them from a feeding bobbin by pulling them in an advancement direction;

deforming permanently, by bending, each of the wires of said groups;

conferring simultaneously to the wires of each group a rotation which will strand the wires together in a helical arrangement which is obtained and maintained by said permanent deformation by bending;

the improvement wherein said step for obtaining the permanent deformation by bending comprises the phases of:

arranging the wires of each group coplanar and mutually side-by-side;

causing simultaneously in each of said wires a permanent deformation by bending only, equal both as regards its absolute value and its space location, said advancement direction lying in the same plane orthogonal to the plane containing said group of wires, at least in the portion of the trajectory of the wires along which the wires of each group pass from the coplanar and mutually side-by-side arrangement, to the stranded configuration, so that all equal and all equally positioned helices are obtained by said wires of the group.

4,195,470

FALSE TWISTING APPARATUS

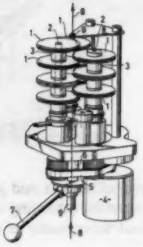
Hans Sturhahn, Esslingen, Fed. Rep. of Germany, assignor to Feldmuhle Aktiengesellschaft, Viersen, Fed. Rep. of Germany

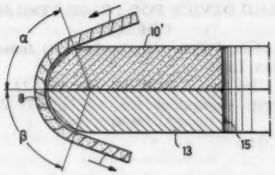
Filed Feb. 22, 1978, Ser. No. 880,298

Claims priority, application Fed. Rep. of Germany, Feb. 25, 1977, 2708204

Int. Cl.[2] D02G 1/04; D01H 7/92

U.S. Cl. 57—339 12 Claims





1. In false twisting apparatus including a plurality of shafts, drive means for rotating said shafts about respective, radially spaced axes extending in a common direction, a plurality of friction disks mounted on said shafts in axially spaced relationship, the disks on each shaft radially overlapping the disks on each other shaft, and guide means for guiding a yarn to be twisted axially between said shafts for sequential frictional engagement by the circumferential faces of said disks, said faces being surfaces of rotation about said axes and arcuately connecting respective radially extending, axially spaced end faces of said disks, the improvement which comprises:

(a) each of said faces consisting of a yarn feed region and a yarn delivery region,

(b) said regions being annular about said axis and axially juxtaposed,

(c) said disk consisting essentially of at least one oxide of aluminum, zirconium, or titanium, and said yarn feed region having a surface roughness greater than the surface roughness of said yarn delivery region.

4,195,471

PARKING METER

Marc L. R. M. Verhoeven, Hofstraat 29, 8440 Westende, Belgium

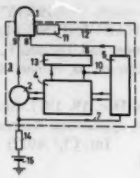
Filed May 8, 1978, Ser. No. 903,547

Claims priority, application Belgium, May 6, 1977, 177336

Int. Cl.[2] G07C 1/30; G07F 1/06

U.S. Cl. 368—90 6 Claims

1. A parking meter adapted to be fitted in a vehicle in a position visible from outside the vehicle, comprising a visible means indicating parking has been paid for, a control device comprising manually operable first switching means for making the visible means operative at the beginning of a parking period and for adjusting it to a rest condition at the end of parking, said control device further comprising a first time measuring device coupled to the switching means for making the time measuring device operative when the visible means are put into operation and for stopping the time measuring device when the visible means is adjusted to the rest condition, the control device comprising further switching means connected to the time measuring device, and means coupling the



further switching means to the visible means and to the time measuring device for rendering the visible means permanently inoperative after a predetermined operating period of the time measuring device starting from an initial position and for resetting the time measuring device to the initial position at the same time.

4,195,472

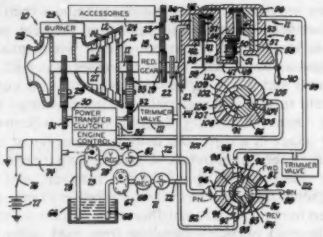
GAS TURBINE WITH FORWARD AND REVERSE MARINE DRIVE

Donovan L. Robinson, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 8, 1978, Ser. No. 876,032

Int. Cl.[2] F02C 3/10, 4/02

U.S. Cl. 60—39.16 S 16 Claims



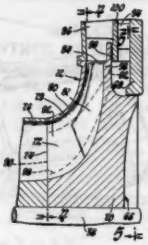
1. In a powershift transmission: an input; an output; gear means connecting said output and input having first drive means including first friction means and first actuator means individually selectively operable on said first friction means to establish a first drive and second drive means including second friction means and second actuator means individually selectively operable on said friction means to establish a second drive; said first actuator means and said second actuator means being simultaneously operable respectively on said first friction means and said second friction means to control said gear means to brake said input and said output to a stationary position; control means having a control member movable between a first position and a second position through a neutral position or an accessory position operative in said first position on said first actuator means to establish said first drive, in said second position on said second actuator means to establish said second drive, in said neutral position to simultaneously actuate both said first actuator and said second actuator means to establish both said first drive and said second drive to brake said input and output and in said accessory position to actuate both said first actuator and said second actuator means to disestablish both said first drive and said second drive to establish a positive neutral condition permitting free running of said input and output.

4,195,473

GAS TURBINE ENGINE WITH STEPPED INLET COMPRESSOR

Robert H. Aspinwall, Zionsville, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 26, 1977, Ser. No. 836,355
Int. Cl.² F02C 9/14
U.S. Cl. 60—39.29 **2 Claims**



1. In a gas turbine engine having a turbine for powering a load and wherein a combustor supplies motive power to the turbine and wherein fuel is supplied to the combustor through fuel control means including a manual operator to schedule the fuel supply to meet vehicle acceleration and engine stall torque requirements, the improvement comprising: a gasifier including an inlet and an outlet having first and second diffuser passages, valve means for selectively controlling air flow through said first and second diffuser passages into the engine combustor for mixture and combustion with fuel flow thereto, said gasifier further including an impeller having blade means thereon defining a primary high capacity mass flow path therethrough for directing a first large mass of air into said first diffuser passage, said impeller further including means therein defining a secondary, low capacity mass flow path through said impeller for discharge of a reduced mass of air flow into said second diffuser passage, control means including said valve means operative during a cruise mode of vehicle operation to selectively close flow of air through said first and second diffuser to reduce engine power output by reduction of mass flow of air into the engine combustor for mixture and combustion with fuel flow thereto without reducing the speed of rotation of said impeller, said control means and valve means operative during acceleration modes of vehicle operation to selectively open both said first and second diffuser passages to increase mass flow of air into the combustor for mixture and combustion with increased fuel flow thereto as produced during acceleration modes of operation to increase power output to maintain engine efficiency during an acceleration mode of vehicle operation, said secondary, low capacity mass flow path being defined by an open-ended channel formed internally of said blade means, and means forming a passage from said open-ended channel to said second diffuser passage.

4,195,474

LIQUID-COOLED TRANSITION MEMBER TO TURBINE INLET

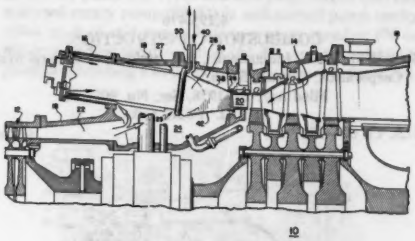
Miles F. Bintz, Schenectady, N.Y., and Raymond L. Dehmer, deceased, late of Clifton Park, N.Y. (by Mary Mae Dehmer, administrator), assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 17, 1977, Ser. No. 842,400
Int. Cl.² F02C 7/12; F01D 25/12; F28F 3/12
U.S. Cl. 60—730 **1 Claim**

1. In a gas turbine including a combustion liner and a turbine, a transition member for conducting hot combustion gas from the combustion liner to an inlet passage of the turbine, said transition member comprising:

a contoured body having an inlet end of circular cross-section conforming to the shape of the exit end of the combustion liner and an exit end of generally rectangular cross-section conforming to the shape of the turbine inlet passage;

an inlet manifold having an inlet adjacent the inlet of said body adapted to receive liquid coolant, said inlet manifold extending longitudinally along and in intimate contact with said body;



an outlet collection manifold having an outlet adjacent the inlet of said body adapted to exhaust the liquid coolant, said outlet collection manifold extending longitudinally along and in intimate contact with said body;

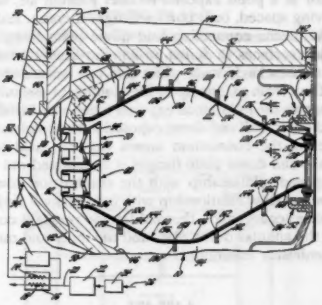
said body having a plurality of laterally disposed passages communicating liquid coolant between said inlet manifold and said collection manifold for transferring heat from said body to the liquid coolant as the coolant follows a lateral circumferential flow pattern.

4,195,475

RING CONNECTION FOR POROUS COMBUSTOR WALL PANELS

Albert J. Verdouw, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 21, 1977, Ser. No. 862,858
Int. Cl.² F02C 3/00, 7/12
U.S. Cl. 60—754 **4 Claims**



1. A gas turbine engine combustor assembly comprising: an annular wall forming a combustion chamber, said annular wall having a plurality of axially directed panels, each of said panels including at least two or more laminated layers of porous material for directing fluid air flow from outside said liner to produce transpiration cooling of the inner surface of said segments in surrounding relationship to said combustion chamber, said panels each having axially spaced ends thereon, a combustor connector ring located in surrounding relationship to said ends on the outer surface of said panels, said ring including a locater tang thereon interposed between said ends in engagement therewith to maintain a controlled weld gap therebetween, a weld annulus of weld metal filling said weld gap to

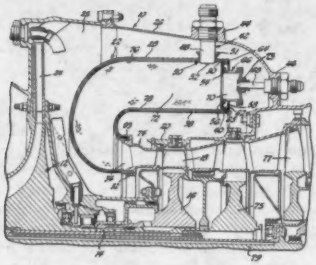
interconnect said ends, said weld annulus having an axial extent within the axial confines of said ring to minimize weld joint width and consequent reduction of flow of transpiration cooling air through said two or more laminated layers on either side of said annulus of weld metal, said weld annulus serving as a heat conductor for transfer of heat to said ring and thence exteriorly of said combustor so as to prevent hot spots in said weld annulus.

4,195,476

COMBUSTOR CONSTRUCTION

Ronald M. Wood, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 27, 1978, Ser. No. 900,757
Int. Cl.[2] F02G 3/00
U.S. Cl. 60—737 **4 Claims**



1. A gas turbine engine combustor assembly located in an inlet air plenum comprising: an outer annular porous laminated wall, an inner annular porous laminated wall aligned with said outer wall to define a fuel combustion zone therebetween having opposite open ends, an annular porous laminated wall dome plate closing one of said open ends, an extension of porous laminated wall on the inlet end of each of said inner and outer annular walls, said extension being directed outwardly of the combustion zone to define a flame isolated connection surface on both the inner and outer laminated walls of the combustor at a point exposed to inlet plenum air, said dome plate having spaced, bent porous flanges thereon, and connection weld means connecting said dome plate flanges to said connection surfaces to define an annular sealed weld joint at said connection surfaces to close said one open end whereby coolant flow from exteriorly of the combustor assembly is free to flow across the full flamed exposed inner wall surfaces of the inner and outer wall and dome exposed to the combustion zone and wherein the connection means between said inner and outer walls and dome plate flanges is maintained out of direct flame exposed relationship with the combustion zone and in direct coolant flow relationship with inlet plenum air for maintenance of a secure, cool, thermal fatigue resistant connection between the annular dome plate and the inner and outer walls of the combustor assembly.

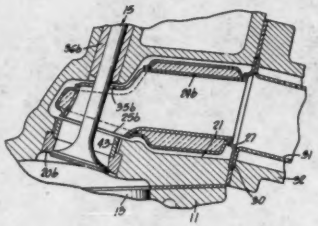
4,195,477

EXHAUST PORT LINER FOR ENGINE

Shuichi Yamazaki, and Shinichi Shimada, both of Kamifukuoka, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 677,667, Apr. 16, 1976, Pat. No. 4,089,163.
This application Mar. 16, 1978, Ser. No. 887,030
Claims priority, application Japan, Apr. 22, 1975, 50-54077[U]; Apr. 24, 1975, 50-55101[U]; Apr. 28, 1975, 50-56856[U]
Int. Cl.[2] F01N 3/10
U.S. Cl. 60—282 **1 Claim**

1. In an internal combustion engine having an exhaust valve and a valve seat operatively interposed between a combustion chamber and walls forming an exhaust port, the improvement comprising, in combination: a laterally elongated thin wall exhaust port liner positioned within the exhaust port and spaced from the walls thereof, said liner being shaped for insertion into operative position through the discharge end of the exhaust port, said liner being integrally formed by an inner wall and an outer wall spaced therefrom, heat insulating material between the inner and outer walls of said liner, said liner



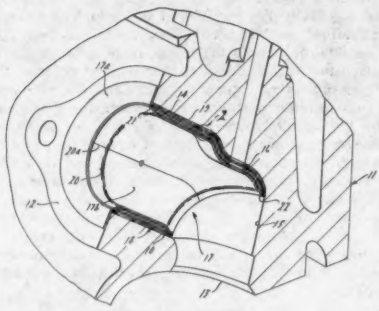
having an entrance opening and an aligned aperture through which portions of said valve extend, a sleeve on said valve seat for directing exhaust gases into said entrance opening, said liner having a discharge opening, and a support flange supporting and encircling the liner adjacent said discharge opening, said flange having a surface for contact with a flange of an exhaust passage.

4,195,478

LOW COST INSERTABLE TYPE PORT LINER

Vemulapalli D. N. Rao, Bloomfield Township, Oakland County; Benjamin T. Howes, Birmingham, and Angelo Jaimee, Farmington Hills, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Nov. 9, 1977, Ser. No. 849,728
Int. Cl.[2] F01N 3/10
U.S. Cl. 60—282 **1 Claim**



1. For use in an internal combustion engine having a housing mass enclosing a combustion zone in one portion thereof, apparatus for modifying the heat transfer characteristic through the walls of an unlined passage extending through said portion of the mass of said engine, said passage walls defining an outer wall and an interior space, insulating means in said passage conforming substantially to the inner contour of said passage outer wall and having a layered assembly with at least five radially distinct zones, the outermost or first zone of said layered assembly consisting of a room-temperature-curable silicone plastic in the thickness range of 0.02–0.05 inches, a second zone consisting of a plain carbon steel sleeve containing less than 0.6% carbon and having a thickness in the range of 0.015–0.018 inches, a third zone consisting of a coating of room-temperature-curable silicone plastic in a thickness of

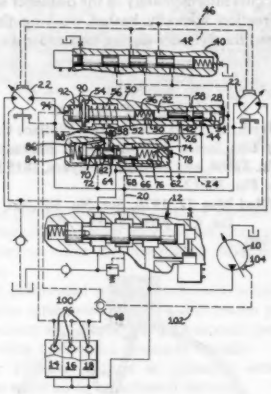
about 0.01 inches and having a melting temperature greater than 200° F., a fourth zone consisting of an insulating wool or fiber mat in the thickness range of 0.020–0.060 inch providing numerous enclosed trapped air spaces, and a fifth or innermost zone consisting of a temperature resistant and weldable metal alloy, said latter zone having a thickness of 0.020–0.040.

4,195,479

TORQUE CONTROL OF HYDRAULIC MOTORS

Joseph E. Dezelan, Western Springs, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Feb. 8, 1979, Ser. No. 18,954
Int. Cl.[2] F16H *39/46, 39/10*
U.S. Cl. 60—420 **8 Claims**



1. In a vehicle drive system including a rotary output, variable displacement hydraulic motor **(22)** adapted to drive a wheel or the like, a pump **(10)** for providing hydraulic fluid under pressure to the motor, a pressure control valve **(30)** connected to the motor for regulating the displacement thereof to achieve a desired system pressure and having a pressure responsive surface **(34)** receiving a signal representative of system pressure and a biasing means **(36)** acting in opposition thereto, the improvement wherein said biasing means includes a variable settable pressure reducing means **(54,60,106)** connected to said pump and to said pressure control valve to apply hydraulic fluid under reduced pressure to said pressure control valve in bucking relation to said signal.

4,195,480

MANIFOLDED MULTIPLE HYDRAULIC PUMP STRUCTURE

Robert L. Shelby, Chillicothe, and Bertwin E. Behrends, East Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

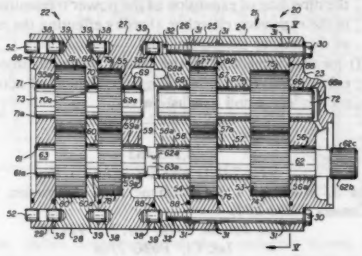
Filed Dec. 26, 1978, Ser. No. 4,793
Int. Cl.[2] F15B *13/09*
U.S. Cl. 60—486 **19 Claims**

1. In a hydraulic system which has a plurality of pumps, an improved pump structure comprising:

a pump casing assembly **(20)** consisting of a plurality of rotary pump casing elements **(23–29)** disposed in face abutting relationship, said casing elements **(23–29)** cooperating to define a first pump cavity **(54)** and a second pump cavity **(55*a*)**, there being a plurality of manifold passages **(82,84,86,87)** formed in said casing elements **(23–29)** for admitting hydraulic fluid to said cavities **(54 and 55*a*)** and delivering fluid from said cavities, and a series of aligned pump drive shaft openings **(56–61)** connecting said pump cavities, and said casing elements **(23–29)** including a fluid delivery end plate **(29)** and a drive end plate**(23)**;

a drive shaft **(62–63)** journalled in said drive shaft openings **(56–61)** which has an end portion **(62*b*)** extending through an opening **(56)** in the drive end plate **(23)** and adapted **(64)** for operative connection to driving means;

a first rotary pump **(76–77)** in said first pump cavity **(54)** and a second rotary pump **(80–81)** in said second pump cavity **(55*a*)**, each of said pumps having a pump member **(76** or **80)** mounted on the drive shaft **(62–63)**, and said manifold passages including a first fluid inlet passage **(82)** for admitting fluid to the first pump **(76–77)**, a first fluid delivery passage **(84)** from said first pump **(76–77)**, said first fluid delivery passage **(84)** having a port in said fluid delivery end plate **(29)**, a second fluid inlet passage **(86)** for admitting fluid to the second pump **(80–81)**, and a fluid outlet passage **(87)** from said second pump **(80–81)**, said fluid outlet passage **(87)** having a port to let fluid out of said casing assembly **(20)**;

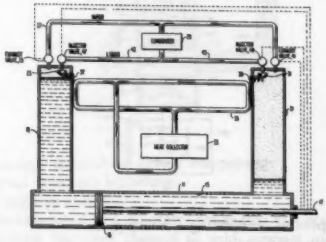


sealing means **(88–89)** between said casing elements **(23–29)**; and means **(33,44,50,51)** detachably securing said casing elements **(23–29)** in assembled, face abutting relationship.

4,195,481

POWER PLANT

Alvin L. Gregory, 5860 Callister Ave., Sacramento, Calif. 95819
Continuation of Ser. No. 584,832, Jun. 9, 1975, abandoned. This application Oct. 19, 1977, Ser. No. 843,376
Int. Cl.[2] F01K *21/02*
U.S. Cl. 60—516 **10 Claims**



1. A prime source of mechanical power comprising, in combination:

(a) means defining an expansion chamber, said expansion chamber having opposed ends and a working fluid and a power transmitting fluid which interact therein for mutual displacement therein, with the power transmitting fluid being situated at each of the opposed ends, separated by the working fluid;

(b) a piston mounted for reciprocal movement within the expansion chamber by the mutual displacement of the working fluid and the power transmitting fluid, and the

direct engagement of the piston with the working fluid, the reciprocal movement of the piston serving as the mechanical power output;

(c) heat transfer means connected at each of the opposed ends of the expansion chamber for transferring heat primarily to the power transmitting fluid to effect vaporization thereof;

(d) a heat collector and conduit means connected to the heat collector and to the heat transfer means for conducting the heat from the heat collector to the heat transfer means;

(e) an injector valve and exhaust valve located at each of the opposed ends of the expansion chamber for controlling the direction of expansion of the power transmitting vapor in the expansion chamber, thereby effecting the reciprocal movement of the piston; and

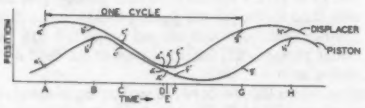
(f) means connected to the piston and each injector and exhaust valve for controlling the sequential actuation of each injector and exhaust valve.

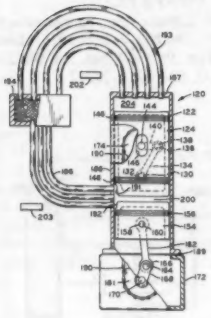
4,195,482

STIRLING CYCLE MACHINE

John S. Moloney, 105 Claremone Ave., Kitchener, Ontario, Canada (N2M 2P7)

Filed Jul. 28, 1978, Ser. No. 929,189
Int. Cl.[2] F02G *1/04*
U.S. Cl. 60—517 **11 Claims**





1. Apparatus comprising a housing;

a cylinder formed in said housing;

first means for providing cooled working fluid and heated working fluid to said cylinder;

a displacer reciprocably movable in said cylinder and movable in one direction to move a cooled working fluid into said cylinder and in another direction to move heated working fluid into said cylinder;

a piston reciprocably movable in said cylinder;

second means being connected to said displacer for driving said displacer in said cylinder and for providing a longer first dwell within a given range of displacer movement near the end of said displacer travel in said one direction than a second dwell in said given range in said other direction;

third means for reciprocating said piston in said cylinder towards said displacer in a compressive stroke and away from said displacer in an expansive stroke and providing a first dwell in a predetermined limited range of piston movement near the beginning of the compressive stroke of the piston and providing a second dwell in said range of piston movement near the beginning of the expansive stroke of the piston, with said first dwell being longer than said second dwell;

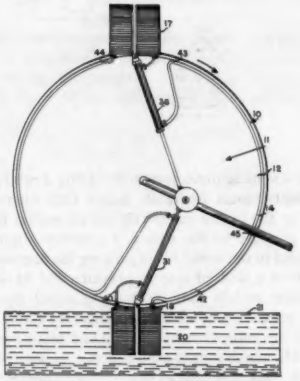
fourth means cooperable with said second and third means for coordinating the reciprocable cycles of said displacer and piston so that the beginning of the piston expansive stroke occurs intermediately of the displacer stroke in said other direction whereby heated working fluid is being drawn into the cylinder during said expansive stroke.

4,195,483

ENGINE APPARATUS

Wallace C. Myers, Sr., 5107 Cochita Dr.; Wallace C. Myers, Jr., 2625 Healy Dr.; James A. Pollet, 4202 Brittany Rd., all of Orlando, Fla. 32808, and Thomas E. Myers, 1815 Preston Rd., Brooksville, Fla. 33512

Filed May 22, 1978, Ser. No. 907,984
Int. Cl.[2] F03G *3/00, 7/06*
U.S. Cl. 60—530 **9 Claims**



1. An engine adapted to operate upon partial immersion in a heated liquid comprising in combination:

a liquid reservoir;

a fixed frame;

a movably mounted frame movably mounted to said fixed frame and located adjacent said liquid reservoir;

heat exchanger means having a plurality of fluid containing heat exchanger units mounted on said movably mounted frame;

drive cylinder means having a plurality of drive cylinders operatively connected to at least two heat exchanger units for driving said movably mounted frame responsive to expansion of fluid in one said heat exchanger unit as it passes into said liquid reservoir; and

one said heat exchanger unit being connected by a fluid line to one said cylinder at one end thereof and to a second said cylinder through a fluid line at the opposite end of said second cylinder and a second heat exchanger being connected by a fluid line to one end of the second cylinder and through a fluid line to the other end of the first cylinder, whereby said engine is driven by heat from said liquid reservoir and said heat exchangers can drive both cylinders simultaneously.

4,195,484

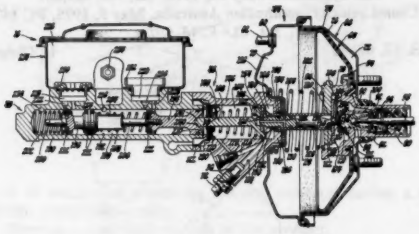
DUAL POWER BRAKE BOOSTER

Thomas P. Mathues, Miamisburg, and Donald L. Parker, Middletown, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 805,114, Jun. 9, 1977, which is a continuation of Ser. No. 587,148, Jun. 16, 1975, abandoned, which is a continuation of Ser. No. 441,239, Feb. 11, 1974, abandoned. This application Jul. 31, 1978, Ser. No. 929,692

Int. Cl.² B60T *13/12*

U.S. Cl. 60—547 R **4 Claims**



1. A brake booster and master cylinder assembly comprising:

a first differential pressure powered booster section having a first control valve for controlling differential pressures therein;

a second differential pressure powered booster section in operative series with said first differential pressure powered booster section and having a second control valve for controlling differential pressures therein;

a master cylinder section in operative series with said booster sections to be actuated thereby;

and manual force input means controlling the actuation of said booster sections by operation of said control valves and providing for manual actuation of said master cylinder section;

each of said booster sections being power operable to actuate said master cylinder section independently of power operation of the other, with one of said booster sections being conditioned for power operation by operation of its control valve by said manual force input means in sequence with and subsequently to the conditioning for full range of power operation of the other of said booster sections by operation of its control valve by said manual force input means to actuate said master cylinder section, said first differential pressure powered booster section normally being actuated up to its full range of power operation to actuate said master cylinder section without operation of said second control valve and said second differential pressure powered second control valve then being operated to actuate said second differential pressure powered booster section to further actuate said master cylinder section, said manual force input means manually operating said master cylinder section only after both of said booster sections have been conditioned for power operation.

4,195,485

DISTILLATION/ABSORPTION ENGINE

VerDon C. Brinkerhoff, 917 Park Row, Salt Lake City, Utah 84105

Filed Mar. 23, 1978, Ser. No. 889,166

Int. Cl.² F01K *25/06*

U.S. Cl. 60—649 **24 Claims**

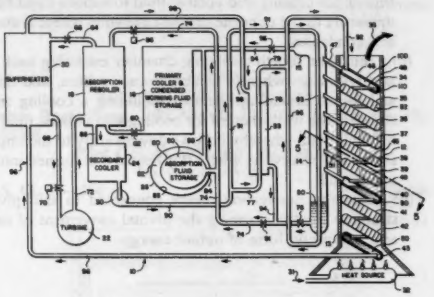
1. A closed-cycle mechanical energy generating apparatus comprising:

a first fluid having a first, lower boiling point;

a second fluid having a second, higher boiling point, the second fluid having a relatively high degree of absorptivity for the first fluid;

distillation means for separating the first fluid from the second fluid by selectively vaporizing the first fluid with heat from a heat source;

condenser means downstream of the distillation means, the vaporized first fluid being condensed in the condenser means;



reboiler means downstream of the condenser means, the reboiler means revaporizing the condensed first fluid;

mechanical expansion engine means for producing mechanical energy from the vaporized first fluid; and

absorption means downstream of the mechanical expansion engine means for absorbing the vaporized first fluid with the second fluid prior to returning the first and second fluids to the distillation means.

4,195,486

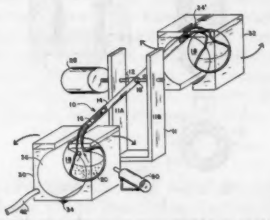
ENERGY GENERATING DEVICE

Luis Rivera-Cruz, H & S Co. 9th M.T. Bn. 3rd FSSG. FMF PAC c/o FPO 96602

Continuation-in-part of Ser. No. 781,130, Mar. 25, 1977, Pat. No. 4,145,890. This application Dec. 4, 1978, Ser. No. 966,263

Int. Cl.² F03G *3/00, 7/00*

U.S. Cl. 60—675 **7 Claims**



1. An energy generating device comprising:

(a) a pivot structure including:

(i) a support means;

(ii) an elongated arm pivotally connected at a point intermediate the ends thereof to said support means for reciprocal arcuate movement about a horizontal axis through said intermediate point, whereby each end of said arm moves back and forth between a first lowermost position and a second uppermost position;

(iii) a reservoir attached to each end of said arm;

(iv) a conduit extending between and connecting said reservoirs, said reservoirs and conduit being otherwise enclosed from the atmosphere; p2 (v) a prescribed quantity of volatile liquid which boils at a relatively low temperature deposited in one of said reservoirs;

(b) a heat exchange means including a source of heat input

thereto operatively associated with each reservoir when positioned in its first lowermost position for causing said volatile fluid in its liquid state to vaporize and flow to the opposite end where it cools and condenses said heat exchange means comprising a first and second insulating chamber surrounding each of said reservoirs when in the lowermost position, said first and second chamber connected to said source of heat input thereto in the walls thereof for causing said volatile fluid to vaporize and flow upwardly to the opposite of said reservoirs where it cools and condenses;

(c) a third and fourth insulating chamber enclosing each of said reservoirs when in its uppermost position, said third and fourth insulating chamber including a cooling substance in the walls thereof for cooling said volatile fluid to its liquid state whereby it flows downwardly to the opposite of said reservoirs where it is heated and formed into a vapor; and

(d) an energy conversion means connected to said pivot structure for transforming the pivotal movement of said arm to a useful form of output energy.

4,195,487

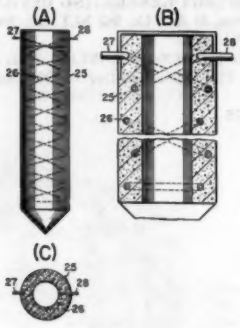
CONCRETE PILES SUITABLE AS FOUNDATION PILLARS

Yoshikiyo Fukushima, Tokyo, Japan, assignor to Nippon Concrete Industries Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 592,327, Jul. 1, 1975, abandoned. This application Jan. 4, 1977, Ser. No. 756,690

Int. Cl.[2] E02D *5/30, 31/08*

U.S. Cl. 405—257 **12 Claims**



1. A concrete pile apparatus adapted to be driven to a permanent frozen stratum passing through a weak stratum which repeats freeze and thaw conditions according to atmospheric changes and the like, comprising:

a concrete pile suitable as a foundation pillar in a very cold district;

thermal conductive means in physical engagement with said concrete pile for cooling said concrete pile;

a cooling chamber in physical engagement with said concrete pile for receiving a refrigerant and connected to said thermal conductive means; and

cooling means disposed above ground and separate from said concrete pile, being fluidically connected with said cooling chamber for providing said refrigerant thereto for cooling said concrete pile and the weak stratum thereabout to a suitable temperature lower than 0° C. and maintaining the same at such temperature;

wherein said thermal conductive means is a plurality of cooling rods of good thermal conductive material which are embedded within said concrete pile, extending from the top to the bottom thereof.

4,195,488

COOLING SYSTEM

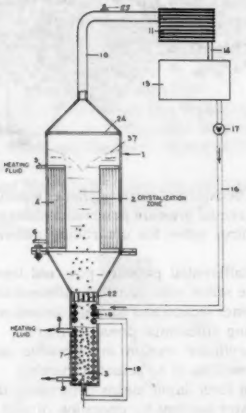
Peter J. Hastwell, 133 Mills Ter., North Adelaide 5006, South Australia, Australia

Continuation of Ser. No. 682,168, Apr. 30, 1976, abandoned. This application May 25, 1978, Ser. No. 909,657

Claims priority, application Australia, May 5, 1975, PC 1478

Int. Cl.[2] F24J *3/02*

U.S. Cl. 62—4 **14 Claims**



1. A method of cooling a fluid medium in a sealed exchanger by means of an endothermic process, which method comprises:

(a) introducing endothermic medium in crystal form in the base of a closed column which also contains the said heat exchanger,

(b) applying a solvent to the endothermic substance in the said column, to thereby dissolve the said crystals in said solvent causing a decrease in the temperature at the heat exchanger by endothermic solution,

(c) applying a vacuum in the said column,

(d) applying heat by means of an applicator to the saturated solution in an upper part of said column to vapourize the said solvent,

(e) drawing off the said vapour into a condenser and recrystallizing said endothermic medium to allow the crystals to fall by gravity from said upper part of said column to the base of the said column, to displace cold saturated solution upwardly in said column in counter flow to said crystals,

(f) causing the crystals as they sink back to the base of the said column, to pass through a flow restrictor in said column disposed between said heat applicator and said base of the column to limit turbulence and transfusion in the liquid in the said column between hot and cold areas,

(g) recirculating the solvent condensate from the said condenser back to the base of the said column to continue the endothermic process, whereby together with the downflow of crystals to cause the upward displacement of the cold saturated solution, and,

(h) cooling said fluid medium in said heat exchange by said decrease in temperature, said chamber containing sufficient endothermic substance to leave crystals at the base of the chamber at maximum heat application to said solution.

4,195,489

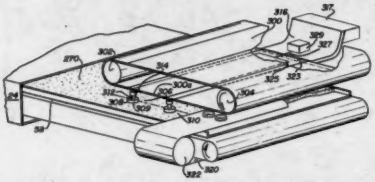
PORTION CONTROLLED FROZEN FOOD

Vincent E. Bernard, Richardson, Tex., assignor to The Jimmy Dean Meat Company, Dallas, Tex.

Division of Ser. No. 633,481, Nov. 19, 1975, Pat. No. 4,060,998, which is a continuation-in-part of Ser. No. 526,146, Nov. 22, 1974, abandoned. This application Sep. 12, 1977, Ser. No. 832,240

Int. Cl.[2] F25D *13/06*

U.S. Cl. 62—63 **8 Claims**



7. A method of producing discrete products having a selected weight comprising:

forming a semi-fluid mixture of the product,

pumping metered amounts of said mixture to an extrusion location,

extruding said mixture into an elongated continuous sheet having a preselected uniform cross-section,

directing said continuous sheet of said mixture through a chilling location while maintaining said preselected uniform cross-section to chill and firm the preselected cross-sectional shape of said lengths, and

severing said continuous sheet into discrete products having the preselected weight by sequentially projecting a plurality of cutting molds against said continuous sheet and subsequently retracting the cutting molds away from the continuous sheet thereby stamping said continuous sheet to form said discrete products, each said mold moving on a continuous belt in synchronism with the continuous sheet and having a cutting edge for severing a predetermined shape from said continuous sheet.

4,195,490

COOLING TUNNEL FOR COOLING A CONTINUOUSLY RUNNING BELT

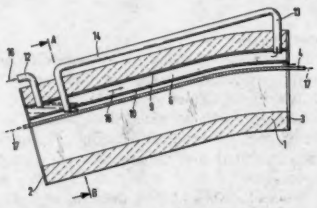
Erhard Soecknick, and Gerhard von Hoesslin, both of Düsseldorf, Fed. Rep. of Germany, assignors to Messer Griesheim GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 18, 1978, Ser. No. 925,869

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1977, 2733418

Int. Cl.[2] F25D *17/02*

U.S. Cl. 62—374 **10 Claims**



1. In a cooling tunnel for cooling a continuously running single run non-continuous-loop belt or partial belt section by means of a low boiling liquified gas as a cooling agent to a predetermined temperature wherein the tunnel includes a belt transport section with guide means for supporting the single run belt as it passes from the entrance end to the exit end of the transport section, the improvement being a hollow cover above said belt transport section, said cover being a cooling chamber for cooling the belt therebelow by radiation, an inlet in said cooling chamber near said transport section entrance, a source of low boiling liquified gas connected to said cooling chamber inlet for supplying the cooling agent to said cooling chamber whereby said cooling agent evaporates in said chamber, an outlet in said cooling chamber near said transport section exit for discharge of the evaporated cooling agent therefrom, and at least one pipeline connected to said outlet and leading to said transport section for conveying evaporated cooling agent to said transport section.

4,195,491

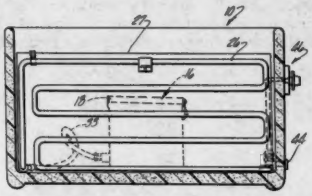
DRY ICE REFRIGERATOR

Walter Roncaglione, 2881 NE. 35 Ct., Fort Lauderdale, Fla. 33308

Filed Oct. 18, 1978, Ser. No. 946,496

Int. Cl.[2] F25D *3/12*

U.S. Cl. 62—384 **14 Claims**



1. A sublimation refrigerator, comprising: an insulated outer container including a cover movable between an open position in which the container is sealed; an inner container for a sublimated solid adapted to be disposed within the outer container, the inner container having a removable cover; a frame having dimensions complementary to the inner dimensions of a wall of the outer container; an elongated cooling coil disposed in a convoluted configuration fixed to the frame, one end of the cooling coil being connected to the interior of the container for the sublimated solid; and manually adjustable valve means connecting the other end of the coil to the exterior of the outer container, whereby the frame may be disposed within the outer container in abutment to said wall and a sublimation solid may be disposed within the inner container and the valve adjusted so as to produce a gaseous pressure within the inner container and the coil allowing sublimation of the solid and control of the temperature within the outer container, or, alternatively, the frame may be removed from the outer container allowing use of the outer container as an unrefrigerated cooler.

4,195,492

SAFETY EARRINGS FOR PIERCED EARS

Gordon A. Johnson, 817 Sir Francis Ave., Capitola, Calif. 95010

Filed Sep. 16, 1977, Ser. No. 833,869

Int. Cl.[2] A44C *7/00*

U.S. Cl. 63—12 **20 Claims**

1. A safety earring for pierced ears which comprises

a cylindrical post adapted to extend through the pierced hole in an ear lobe, and

including at one end of said post

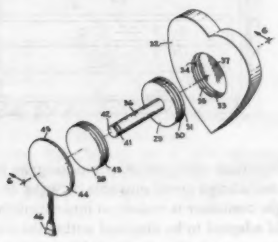
a stop having an ear lobe facing side and said ear lobe facing side of said stop has a substantially flat and smooth surface surrounding said post with said post extending perpendicularly from the center of said ear lobe facing side of said stop and wherein said ear lobe facing side of said stop is laterally dimensioned larger than said post and larger than the pierced hole to prevent said stop from entering the pierced hole and is adapted to be positioned flat against one surface of the ear lobe, and

a first connector portion for couplingly mating with an ornament, and

including at the opposite end of said post a second connector portion for couplingly mating with a back;

a back for detachable connection with said second connector portion, wherein said back includes a third connector portion for couplingly mating with said second connector portion to hold said back to said post, said back being laterally dimensioned larger than said post and larger than the pierced hole to prevent said back from entering the pierced hole and is adapted to be positioned against the other surface of the ear lobe to retain said post in the pierced hole; and

an ornament for easy detachable connection with said first connector portion, wherein said ornament includes a fourth connector portion for couplingly mating with said first connector portion to hold said ornament to said post during normal activity, and wherein said fourth and first connector portions are automatically operable to release said fourth connector portion from said first connector portion whenever there is excessive tension between said fourth and first connector portions from a force acting on said fourth connector portion in a direction relatively



away from said cylindrical post and relatively away from the ear lobe, whereby said ornament is freely released from said post and said tension between said fourth and first connector portions is eliminated to protect the ear lobe from injury, and whereby said ornament may be easily connected to and disconnected from said post by the wearer without removing said post from the pierced hole and without looking in a mirror; and

wherein said stop and said first connector portion together are laterally dimensioned no larger than approximately 6 millimeters and are longitudinally dimensioned no larger than approximately 3.5 millimeters, and wherein the perimetrical surface of said stop and of said first connector portion is at least somewhat smooth and is solid in the sense that said perimetrical surface of said stop and of said first connector portion has no hole or opening; thereby protecting against said ornament staying undesirably caught in said first connector portion whenever said fourth connector portion is pulled, and thereby protecting against anything else being accidentally caught in said first connector portion, thus the ear lobe is protected from injury and thus said back and said post are protected from needless accidental detachment and consequential loss.

4,195,493

ANNULAR JEWELRY ARTICLE

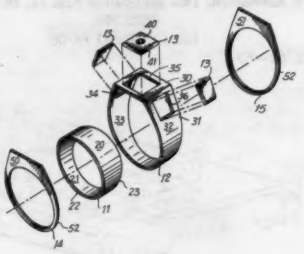
Max Bogner, 427 Ft. Washington Ave., New York, N.Y. 10033, and Larry Grun, 6411 99th St., Rego Park, N.Y. 11374

Filed Mar. 29, 1978, Ser. No. 891,191

Int. Cl.[2] A44C *9/00, 27/00*

U.S. Cl. 63—15 **1 Claim**

1. An annular article of jewelry comprising an annular imperforate liner member having an exposed surface adapted to contact a wearer and a concealed oppositely disposed surface; an outer annular perforate member supported in surrounding relation relative to said liner member and forming therebetween an annular interstice, said outer member having at least one through opening therein communicating with a portion of said interstice; an insert of configuration at least partially corresponding to said through opening and positioned within said opening; means directly securing said insert in fixed relation



relative to said liner member; said liner member and outer member being of different diameters to form said interstice, and a pair of orificed end plates annularly interconnected to the free edges of said liner and outer members to enclose said annular space and form imperforate side faces of said annular article.

4,195,494

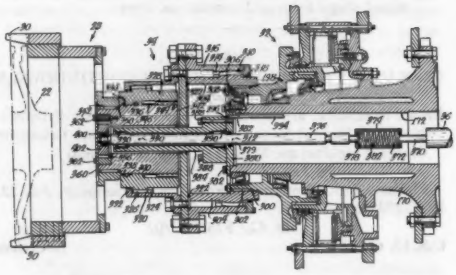
DYNAMOMETER AND COUPLING FOR A TEST STAND

Lionel L. Kinney, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 763,316, Jan. 28, 1977, Pat. No. 4,092,855. This application Jun. 16, 1977, Ser. No. 807,030

Int. Cl.[2] F16D *3/18*

U.S. Cl. 64—9 R **2 Claims**



1. A coupling comprising:

a hollow shaft having radially outwardly directed splines;

a tube slidably receiving said shaft and having radially inwardly directed splines on the interior thereof in engagement with the splines on said shaft;

one set of said radially directed splines having a relatively short axial length and the other having a relatively long axial length;

means connected to said tube defining an interior splined surface;

means including a convex splined surface having its center on the longitudinal axis of said shaft and engaged with said interior splined surface;

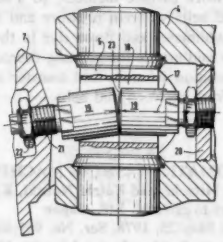
a support sleeve extending at least partially through said hollow shaft and normally spaced therefrom; and

means mounting said support sleeve and said convex splined surface.

4,195,495
UNIVERSAL JOINT

Gerd Sehlbach, and Ditmar Klischat, both of Essen, Fed. Rep. of Germany, assignors to Gelenkwellenbau GmbH, Essen, Fed. Rep. of Germany

Filed Mar. 1, 1978, Ser. No. 882,372
Claims priority, application Fed. Rep. of Germany, Mar. 15, 1977, 2711177
Int. Cl.² F16D 3/26
U.S. Cl. 64—17 R 7 Claims



1. A universal joint comprising first and second yokes, a bore extending through each yoke, a cross trunnion carried between said first and second yokes in said bores of said yokes, and a stop member carried by each of said yokes, each said stop member having an end face adapted for engagement with the end face of the other stop member to limit the amount of angular deflection of said universal joint to a predetermined maximum value at an angle of rotation of the joint, an axial bore extending through said cross trunnion and wherein said stop member comprises a limit bolt axially extending through said yoke into said bore of said trunnion, and the end faces of each of said limit bolts being concentric with the axis of rotation of each of said yokes.

4,195,496
ADJUSTABLE LENGTH CIRCULAR KNITTING NEEDLE

Christine M. Vasquez, 30690 Vanderbilt, and Linda L. Rawlins, 102 Hermes Ct., both of Hayward, Calif. 94544

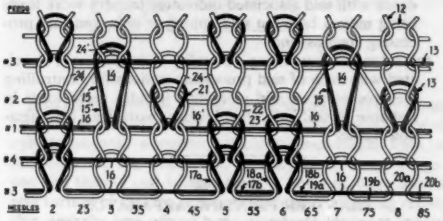
Filed May 4, 1978, Ser. No. 902,943
Int. Cl.² D04B 35/02
U.S. Cl. 66—117 8 Claims

1. An adjustable circular knitting needle assembly, comprising a pair of members having distal knitting points, a flexible member joining the proximal ends of said pair of members, first means for storing a portion of said flexible member within at least one of said pair of members and second means for selectively releasing or retracting a desired length of said flexible member from said first means; said first means including a reel assembly disposed within said one of said pair of members, said reel assembly including a frame member and a spool wheel secured to said frame member in rotatable fashion, and said second means including a handle associated with said spool wheel to effect rotation thereof.

4,195,497
AERATED STOCKING

Ralph Goldstein, West Hempstead, N.Y., and Ralph S. Swanson, Lenoir, N.C., assignors to Allstate Hosiery Sales, Inc., New York, N.Y. and Connie Lee Hosiery Mills, Inc., Lenoir, N.C., part interest to each

Continuation of Ser. No. 810,921, Jun. 29, 1977, abandoned. This application Aug. 28, 1978, Ser. No. 937,409
Int. Cl.² A41B 11/02; D04B 9/46
U.S. Cl. 66—185 9 Claims

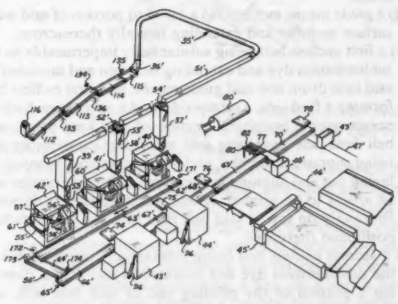


1. An aerated stocking in which an aerated region thereof is made by knitting a synthetic yarn with another softer, more moisture-absorbent yarn to provide a greater surface area of the synthetic yarn on the exterior surface of the aerated region than on the interior surface and a greater surface area of the other yarn on the interior surface of the aerated region than on the exterior surface and comprising courses containing needle loops and sinker loops of both yarns and a plurality of spaced floaters of one yarn across needle loops and sinker loops of the other yarn and wales containing enlarged loops in the wale direction formed by both yarns in which the upper portions of the enlarged loops formed by both yarns is knit with yarn in a course beyond an adjacent course to provide an array of spaced apart airflow interstices defined by the composite yarns forming the elongated loops for increased aeration free of crossing yarns within the confines of the airflow interstices.

4,195,498
AUTOMATIC LAUNDRY SYSTEM

Norvin L. Pellerin, New Orleans, La., assignor to Pellerin Milnor Corporation (Entire), Kenner, La.

Filed May 5, 1978, Ser. No. 903,115
Int. Cl.² D06F 31/00
U.S. Cl. 68—3 R 11 Claims



1. In an automatic laundry processing system for performing

predetermined operations sequentially upon individual laundry work loads, the combination comprising:

a plurality of work load processing stations;

conveyor means comprising a plurality of conveyor units for receiving individual laundry work loads from certain ones of said processing stations and depositing said individual laundry work loads at other one of said stations:

memory means comprising a plurality of memory units with one of said memory units being associated with each one of said processing stations and one of said memory units being associated with each of said conveyor units for storing individual laundry work load identification signals, said individual laundry work load identification signals being uniquely associated with individual laundry work loads;

transfer means for transferring individual laundry work load identification signals between said memory units in accordance with said associated individual laundry work loads being moved between said conveyor units and said processing stations; and

control means comprising a plurality of control units associated with each of said processing stations for controlling the processing of said individual laundry work loads in response to said individual laundry work load identification signals.

4,195,499

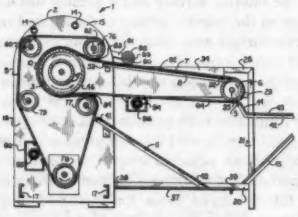
TRANSFER PRINTING APPARATUS

John A. Yost, 259 N. 10th St., Kansas City, Kans. 66102

Filed Mar. 22, 1978, Ser. No. 889,331

Int. Cl.[2] D06P *1/00*; **B41F** *3/52, 17/10*; **B44C** *1/16*

U.S. Cl. 68—5 D **13 Claims**



1. A transfer printing machine for printing discrete articles with heat fixing sublimination dye, said machine comprising:

(a) a supportive frame;

(b) a heat drum rotatably mounted in said frame and extending laterally thereacross; heat being internally applied in substantially uniform amounts over a surface of said heat drum;

(c) a planar work surface member connected with said frame and extending substantially perpendicularly of said heat drum;

(d) a guide means mounted in a forward portion of said work surface member and extending laterally thereacross;

(e) a first endless belt being substantially impermeable to the sublimination dye and extending between and mounted on said heat drum and said guide means; said first endless belt forming a feed side, a return side, and a printing end which passes over a peripheral portion of said heat drum; said belt feed side overlying said work surface member and being supported thereby, and forming an area adapted for laying out and aligning in overlying fashion a transfer and an article to be printed, wherein said transfer is disposed abuttingly on top of said belt feed side and said article is positioned thereover;

(f) a second endless belt being substantially impermeable to the sublimination dye and mounted in said frame, overlying a portion of the printing end of said first belt, and translating synchronously therewith;

(g) synchronization means for positively synchronizing the movement of said first and second belts when said first belt is engaging said heat drum;

(h) power means for synchronously translating said first and second belts; and

(i) means for urging said first and second belts against said heat drum and producing a substantially constant pressure between said first and second belts while said first belt is engaging said heat drum and enclosing said transfer and article, whereby translation of said first and second belts conveys said transfer and article from a first position above said work surface member; to a second position between said belts wherein pressure and heat from said heat drum sublimates and flows dye in the transfer outwardly onto said article for printing thereon; and thence to a third position wherein said transfer and article are discharged from between said belts.

4,195,500

AUTOMATIC WASHING MACHINE

Hideyuki Tobita, Hitachi, and Koichi Nozaki, Kodaira, both of Japan, assignors to Hitachi, Ltd., Japan

Filed May 25, 1978, Ser. No. 909,462

Claims priority, application Japan, May 28, 1977, 52-61730

Int. Cl.[2] D06F *33/02*

U.S. Cl. 68—12 R **6 Claims**

INDICATION MODES	OPERATIONS	INDICATION LAMPS		
		Df	De	Do
X_1	WASH	○	△	△
X_2	RINSE	△	○	△
X_3	DEHYDRATION	△	△	○
X_4	FEED WATER ABNORMAL	○	□	□
X_5	MOTOR DRIVE ABNORMAL	□	○	□
X_6	MOTOR STOP ABNORMAL	□	□	○
X_7	INCREASE OF WEIGHT OF OUTER BATH ABNORMAL	○	○	□
X_8	DECREASE OF WEIGHT OF OUTER BATH ABNORMAL	○	□	○
X_9	DRAIN ABNORMAL	□	○	○
X_{10}	UNBALANCE ABNORMAL	○	○	○

5. An automatic washing appliance of the type including a wash tub, a water feed unit, water drain unit, agitator, drive unit and control means for carrying out washing, rinsing, and dehydrating steps, comprising:

malfunction identification means for identifying the nature of any of a plurality of abnormal operations, should they occur during any of the washing, rinsing and dehydrating steps, said malfunction identification means including a number of indicator elements, said elements being fewer in number than said plurality of identifiable abnormal operations, and means for changing the manner in which said indicator elements are perceivable, wherein said indicator elements are a plurality of light emitting elements, and said means for changing includes means for turning on, turning off, and flashing said light emitting elements in different combinations depending on the type of abnormal operation that occurs.

4,195,501

APPARATUS FOR TANNING SKINS

Luis G. G. Inzunza, Rio Petatlan 866, Culiacan, Sinaloa, Mexico

Filed Sep. 15, 1978, Ser. No. 942,641

Int. Cl.[2] C14C *1/00*

U.S. Cl. 69—32 **26 Claims**

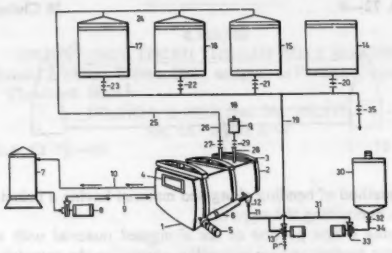
1. An apparatus for tanning skins in a rapid and efficient manner comprising

a closed first tanning tank where skins to be tanned are hung, said first tanning tank having at least one airtight door for loading and unloading the skins, an inlet/outlet pipe with a valve for filling and emptying said first tanning tank, and an elevation pump operatively connected thereto, and a respiration pipe to permit gas to enter and exit said first tanning tank;

said respiration pipe having means for producing a gas which is chemically inert to tanning liquids;

first, second and third storage tanks for storing different liquids used in tanning, said first storage tank being open on its upper portion, said second and third storage tanks being airtight;

each of said first, second and third storage tanks having an output pipe with a valve for controlling the flow of liquid



therethrough, said output pipes being connected to said elevation pump through a pipe system;

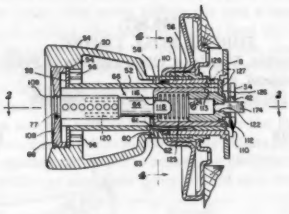
said second and third storage tanks and said first tanning tank having outgoing pipes, said outgoing pipes of said second and third storage tanks being connected to said outgoing pipe of said first tanning tank to permit gases to flow between each of said second and third storage tanks and said first tanning tank.

4,195,502

BREAK-AWAY DOOR KNOB

Walter E. Best, and R. Gene McCullum, both of Indianapolis, Ind., assignors to Best Lock Corporation, Indianapolis, Ind.

Filed Jun. 2, 1978, Ser. No. 911,962
Int. Cl.[2] E05B *63/00*
U.S. Cl. 70—224 **10 Claims**



1. A cylinder lock having a torque-limited knob, comprising a lock chassis,

a knob sleeve rotatable in said chassis to retract a lock bolt, and selectively-operable means to block the sleeve from bolt-retracting rotation, said knob sleeve having an outer end adapted to support the outer end of a knob mounted thereon and being formed with a seat to receive a key-operated core non-rotatably mounted therein,

a knob mounted for rotation on said sleeve, and means for supporting the knob at the outer end of the sleeve and permitting relative rotation of the knob with respect to the core-receiving seat,

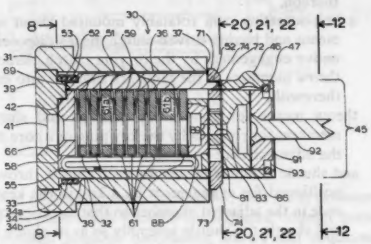
and means normally connecting said knob to rotate the sleeve in bolt-retracting rotation, said means including release means which releases such connection under excessive turning force applied to the knob when the sleeve is blocked from bolt-retracting rotation.

4,195,503

ROTARY DISC-TUMBLER LOCK CYLINDER

Marvin E. Roberts, 2305 S. Arlington, Reno, Nev. 89502

Filed Jan. 23, 1978, Ser. No. 871,549
Int. Cl.[2] E05B *27/00*
U.S. Cl. 70—366 **33 Claims**



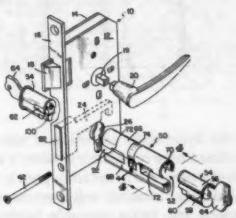
1. In a lock cylinder having a body with a generally circular cylindrical opening longitudinally therein, a generally circular cylindrical core assembly selectively removable from and insertable into said body, said core assembly having a flange on one end thereof and being insertable into said body until the rear surface of said flange is in substantial confronting relationship with the face of said body, said body having a generally circular cylindrical counterbore the central axis thereof being coincidental with the central axis of said cylindrical opening, said counterbore being formed part way into said body, the diameter of said counterbore being greater than the diameter of said cylindrical opening and less than the diameter of said flange, said counterbore being formed in said body to provide space for a front sidebar retainer with said core assembly fully inserted in said body.

4,195,504

MORTISE LOCK ADAPTATION TO KEY-REMOVABLE CORES

William R. Foshee, Indianapolis, Ind., assignor to Best Lock Corporation, Indianapolis, Ind.

Filed Aug. 10, 1978, Ser. No. 932,557
Int. Cl.[2] E05B *9/10, 17/04*
U.S. Cl. 70—369 **17 Claims**



1. A double-ended lock cylinder adapted to be mounted through a conforming opening in a mortise lock case for key operation of a bolt therein, comprising

an elongated cylinder housing having a cylindrical barrel and a radially protruding flange extending axially of the barrel, at least one end of such housing having a cross sectional shape to pass through such conforming opening,

core chambers formed in the opposite ends of the housing for the reception therein of key-removable cores each having a portion containing a key plug and a laterally connected portion forming a tumbler housing, such chambers being formed to dispose the key plugs of the two cores coaxially in the barrel and including means adjacent

such chambers for engagement by core retaining means for the cores mounted therein,

cam-throw shuttle means mounted in said cylinder housing between said chambers for axial and rotative movement on the axis of the key plugs of cores received in the chambers, said shuttle means including two relatively rotatable throw members, each having a driving clutch element thereon,

a bolt-actuating cam rotatably mounted about said shuttle means and having driven clutch means disposed for alternative engagement by the driving clutch elements of said throw members as the same are shuttled into engagement therewith,

throw means for connecting each of said shuttle throw members for rotation by the key plug of a core mounted in the adjacent core chamber,

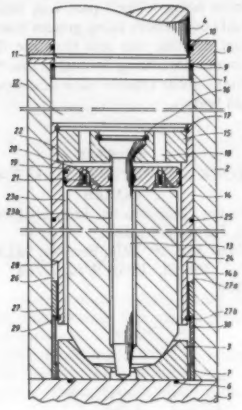
and shuttle actuator means for each shuttle throw member, positioned for engagement by a key in the key plug of a core in the adjacent chamber so that insertion of such key will shuttle the shuttle assembly so as to clutch the throw element connected to such plug to the bolt-actuating cam.

4,195,505

PRESS FOR HYDROSTATIC EXTRUSION OF TUBES

Pertti Syvakari, Helsingborg, Sweden, assignor to ASEA AB, Vasteras, Sweden

Filed Nov. 17, 1978, Ser. No. 961,850
Claims priority, application Sweden, Nov. 22, 1977, 7713163
Int. Cl.² B21D *22/10*
U.S. Cl. 72—60 **3 Claims**



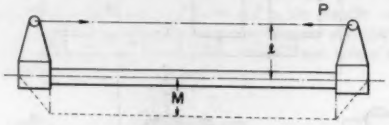
1. A press for the hydrostatic extrusion of tubes, including a press chamber defined by a pressure cylinder, a die at one end of said cylinder and a pressure-generating punch at an opposite end of said cylinder, a mandrel unit permanently disposed within said chamber and being movable between two axial positions, said unit comprising a mandrel and a tubular sleeve which, during an extrusion operation, is capable of transmitting forces acting on said mandrel to a force-absorbing unit in the press, the improvement wherein a portion of said sleeve has means thereon defining an annular gap between said sleeve and the wall of said cylinder, a stop ring located in said gap, said stop ring having an outer diameter slightly greater than the inner diameter of said cylinder wall so as to form an interference fit within said press chamber, said stop ring having opposed end faces spaced a first predetermined distance apart, and said sleeve having a pair of stop faces thereon spaced a second predetermined distance apart greater than said first distance, said end faces respectively engaging said stop faces during axial movement of said mandrel unit for determining the limit positions of said mandrel unit.

4,195,506

METHOD AND APPARATUS FOR BENDING ELONGATED MATERIALS

Shunpei Kawanami, Hiratsuka, and Susumu Hanyo, Yokohama, both of Japan, assignors to Daiichi Koshuha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 22, 1978, Ser. No. 918,022
Claims priority, application Japan, Jun. 22, 1977, 52-73337; Mar. 31, 1978, 53-36576
Int. Cl.² B21D *7/16, 7/12*
U.S. Cl. 72—8 **38 Claims**



1. A method of bending elongated material having a principal axis, comprising the steps of:

clamping a first portion of the elongated material with a clamp having an arm extending normal to the principle axis of the elongated material;

clamping a second portion of the elongated material with a clamp having an arm extending normal to the principle axis of the elongated material, wherein a portion of the elongated material to be bent is located between said first and second clamped portions;

applying a force to the arms of the clamps by pulling said arms toward each other along a line which inclines with respect to the principal axis of the portion of the elongated material to be bent, said force being applied at a location on each arm displaced from the principle axis of the elongated material; and

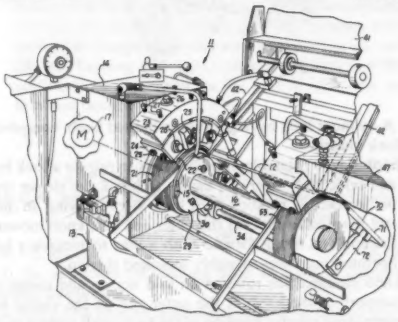
stimulating bending in a zone within the portion of the elongated material to be bent, said zone moving along the elongated material and moving with respect to said locations, whereby said locations on the arms move toward each other as the material is bent.

4,195,507

THREAD ROLL TIMING

Edward A. Prutton, Westlake, Ohio, assignor to Prutton Corporation, Cleveland, Ohio

Filed Oct. 5, 1978, Ser. No. 948,696
Int. Cl.² B21H *3/04*
U.S. Cl. 72—93 **12 Claims**



1. A work rolling machine to roll a spiral form on a workpiece, comprising, in combination; a base, a head carried on said base, a hollow quill longitudinally movable in said head, a drive shaft journalled in said quill, a rotary first work rolling die secured for rotation on said drive shaft, a complementary

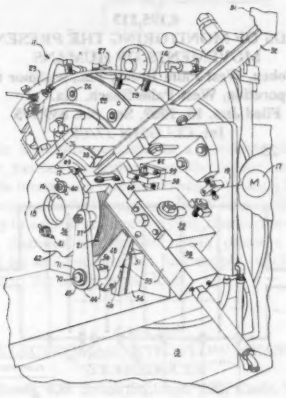
second work rolling die mounted on said base to cooperate with said rotary die for rolling a spiral form on a workpiece, feed means connected to feed successive workpieces to an entrance area of said second die, means to adjust the relative phase timing of the dies and the feeding of a workpiece by said feed means in order to substantially eliminate any mismatch of spiral rolling by said dies, and said timing means including a male thread on said quill and a nut threaded on said male thread on said quill and acting on said head for longitudinal adjustment of said quill and rotary first die.

4,195,508

ADJUSTABLY TIMED THREAD ROLL MACHINE

Ronald J. Matej, Parma, Ohio, assignor to Prutton Corporation, Cleveland, Ohio

Filed Oct. 5, 1978, Ser. No. 948,695
Int. Cl.[2] B21H *3/04*
U.S. Cl. 72—93 **19 Claims**



1. In a work rolling machine to roll a spiral form on a workpiece by a rotary first work rolling die and a complementary second work rolling die, feed means to feed successive work pieces to an entrance area of the second die, the feed means including a rotatable timing wheel rotated in response to rotation of the first die and a follower following the periphery of the wheel, and timing means to adjust the relative phase timing of the dies and the feed of a workpiece by the feed means,

the improvement wherein said timing means includes adjustable means connected to adjust the peripheral position of said follower along the periphery of said timing wheel.

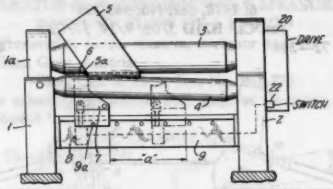
4,195,509

DEVICE FOR BENDING RING SEGMENT-SHAPED PLATE BLANKS INTO CONICALLY SHAPED PARTS

Rudolf Herburg, Hamburg, Fed. Rep. of Germany, assignor to Hinrichs Gesellschaft mit beschrankter Haftung, Geesthaght, Fed. Rep. of Germany

Continuation of Ser. No. 801,339, May 27, 1977, abandoned.
This application Aug. 21, 1978, Ser. No. 934,724
Claims priority, application Fed. Rep. of Germany, Jun. 12, 1976, 2626452
Int. Cl.[2] B21D *11/08, 5/14*
U.S. Cl. 72—167 **22 Claims**

1. A device for bending ring segment-shaped plate blanks having a shorter arc edge along one side and a longer arc edge along the opposite side into conically shaped parts comprising a pair of roll stands, at least one top roller supported between said roll stands, a pair of side rollers supported between said roll stands, means for driving said blanks between said top roller and said side rollers to form the conically shaped parts, at least one abutment member positioned for engaging and guiding the shorter arc edge of the plate blank as it passes between said top roller and said side rollers, and a support assembly including an elastic and adjustable counter pressure mechanism connected to said abutment member for biasing said abutment member against the shorter arc edge of the plate



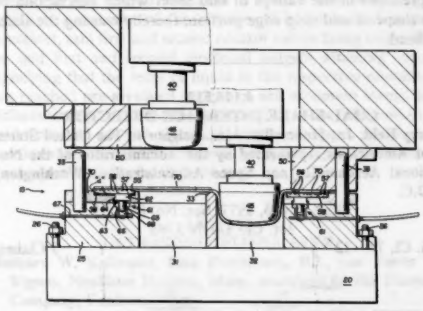
blank with an adjusted counter pressure so that if the pressure exerted by the plate blank exceeds the adjusted counter pressure, said counter pressure mechanism allows said abutment member to yield, and said counter pressure mechanism cooperating with said drive means for controlling said drive means.

4,195,510

DRAW BEAD HAVING ALTERNATING PRESSURE SURFACES AND GROOVES

William A. Juergens, 37126 Yorkshire, Apt. 139, Sterling Heights, Mich. 48077

Filed Jun. 26, 1978, Ser. No. 919,210
Int. Cl.[2] B21D *22/00*
U.S. Cl. 72—350 **7 Claims**



1. In a die plate having a die cavity wherein a metal blank is pulled over a draw ring radius into said die cavity for forming a recessed part by forcing the plastic flow of metal into the die cavity, said die plate having at least two pressure-applying surfaces adjacent to and substantially surrounding said die cavity, said pressure-applying surfaces being closely spaced and separated only by a groove;

said pressure-applying surfaces and groove forming the top surface of a draw bead insert, said die plate having a complementary groove which holds said draw bead insert;

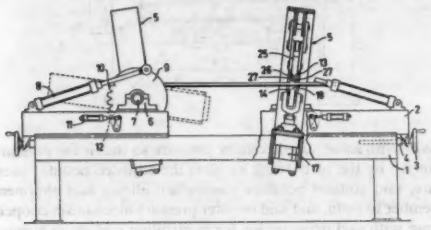
said draw bead insert being supported by resilient means mounted in said die plate complementary groove; and

said draw bead insert pressure-applying surfaces lying on a horizontal plane vertically spaced from the horizontal plane of the remaining portions of said die plate.

4,195,511
APPARATUS FOR BENDING SECTION-SHEET, PLATE STRIP AND THE LIKE

Gustav Näslund, Älvsbyn, Sweden, assignor to Korstrask Mekaniska, G. Naslund, Alvsbyn, Sweden

Division of Ser. No. 807,651, Jun. 17, 1977. This application Sep. 6, 1978, Ser. No. 940,308
Int. Cl.[2] B21D *5/02, 9/14, 17/02*
U.S. Cl. 72—384 4 Claims

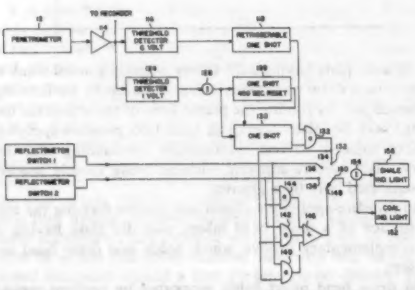


1. A device for bending a sheet having a transverse contour comprising corrugations forming a series of mutually parallel ridges and valleys with common side walls, said device comprising an assembly formed by a strip having a straight edge portion that is as long as said series is wide, and opposite to the strip a sheet holding member comprising bars as long as said edge and having surfaces with longitudinal contours substantially corresponding to said transverse contour of said sheet, said bars being transversely interspaced apart so as to straddle said strip edge with said surfaces on the opposite sides of said edge, and means for moving said strip and member towards and away from each other between an open position to permit positioning of said sheet therebetween, and a closed position wherein said straight edge portion engages said sheet and moves between the bars which straddle said strip edge to form impressions in the valleys of said sheet which correspond to the shape of said strip edge portion, thereby causing the sheet to bend.

4,195,512
COAL-SHALE INTERFACE DETECTOR

Harry Reid, Jr., Huntsville, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Nov. 3, 1977, Ser. No. 848,419
Int. Cl.[2] G01N *3/48*
U.S. Cl. 73—12 3 Claims

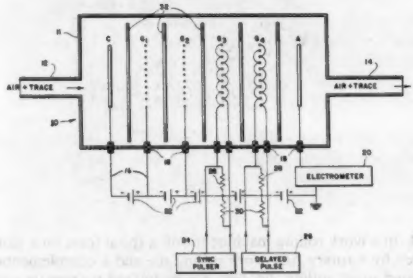


1. A coal-shale interface detector comprising:
an elongated ram;
a frame and bearing means supported by said frame for engaging and slidably constraining said ram for movement parallel to the longitudinal dimension of said ram;
a hard surfaced end on one end of said ram;
drive means for repeatedly reciprocally moving said ram along a line parallel to the longitudinal dimension of said ram;
accelerometer means coupled to said ram for providing an electrical output representative of the rate of change of velocity of said ram responsive to said hard surfaced end of said ram striking a material, and thereby the impact of the ram with a material; and
circuit means responsive to said electrical output from said accelerometer for providing as an output a first state responsive to an electrical output of lower amplitude, but of longer duration than selected values of amplitude and duration, and for providing as a second output a second state responsive to an electrical output of higher amplitude and shorter duration than said selected values.

4,195,513
METHODS OF MONITORING THE PRESENCE OR MOVEMENTS OF HUMANS

Martin J. Cohen, West Palm Beach, Fla., assignor to Franklin GNO Corporation, West Palm Beach, Fla.

Filed Jun. 18, 1969, Ser. No. 839,775
Int. Cl.[2] G01N *37/08*
U.S. Cl. 73—23 9 Claims



1. A method of monitoring a mobile body, which comprises exposing said body, at a first location, to a source of an unobtrusive tracking or marking substance which clings to the body in minute amounts upon contact therewith and is capable of producing an ionizable gas, thereafter collecting a gaseous sample at a second location to which the substance is carried by the body, forming ions of said substance from said gaseous sample by ion-molecule reactions, applying a DC drift field to said ions, segregating said ions in said drift field into groups in accordance with their drift velocity, and detecting at least a portion of the segregated ions of said substance, said ion forming and segregating steps being performed at a region maintained at a pressure such that the gas collision mean free path is very small compared to the dimensions of said region.

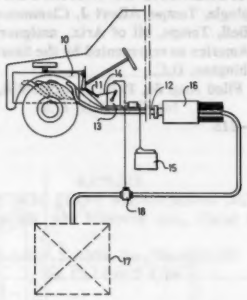
4,195,514
ANALYZING EXHAUST GASES OF VEHICLE INTERNAL COMBUSTION ENGINES

Lars T. Collins, Mölndal, Sweden, assignor to Lars Collin Consult AB, Mölndal, Sweden

Filed Nov. 1, 1978, Ser. No. 956,500
Claims priority, application Sweden, Nov. 2, 1977, 7712354
Int. Cl.[2] G01M *15/00*
U.S. Cl. 73—116 2 Claims

1. A method of analysing the exhaust gases from a vehicle internal combustion engine, comprising the steps of:
(a) attaching a monitoring unit to the member of the engine controlling its fuel supply means,

(b) running the engine at idling speed, disengaged from the driving transmission of the vehicle,
(c) adjusting the actuation path between said monitoring unit and said fuel supply means to a zero position in which all play is eliminated,
(d) during a given period of time permitting said monitoring unit to subject the engine to a series of increases in the fuel supply, above the idling speed, each increase intended to



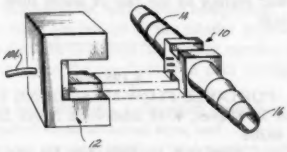
simulate a certain incident in a pre-selected traffic sequence, but not exceeding what the engine can absorb by using its inertia and internal losses as braking factors, and
(e) displacing said fuel supply means during each incident of activity in a positive direction only responsive to oredetermined changes in effective mean pressure and speed caused by said increases in fuel supply, until the engine returns to the idling speed level.

4,195,515

IN LINE ELECTROMAGNETIC FLOW MEASUREMENT TRANSDUCER

Owen C. Smoll, 635 Baker St., Apt. 202, Costa Mesa, Calif. 92626

Continuation-in-part of Ser. No. 700,176, Jun. 28, 1976, abandoned. This application Dec. 23, 1977, Ser. No. 863,706
Int. Cl.² G01F *1/58*
U.S. Cl. 73—194 EM **28 Claims**



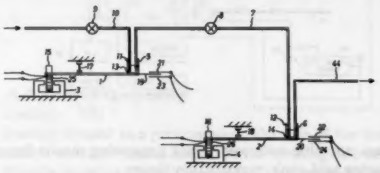
1. A liquid flow meter device comprising a disposable sensor section including a tubular member made of nonmagnetic material adapted to be connected into a fluid flow line, and a pair of electrodes extending through the wall of the tubular member and terminating on the inner surface at diametrically opposite points in a common transverse plane, and an electromagnetic section including a C-shaped core forming a pair of opposing poles with a gap between the poles and a winding on the core, a multiple terminal connector having a female receptor section and a male plug section, one of said connector sections being integral with the sensor section in the region of said electrodes, and the other section being mounted adjacent the gap between the poles of the C-shaped core, the two sections of the connector engaging each other by inserting the plug section into the receptor section to complete electrical and mechanical connections between the disposable sensor section and the electromagnetic section when the sensor section is moved into the gap between the poles of the core in a direction transverse to the central part of the core, and means in the sensor section for electrically connecting the electrodes to the terminals of the connector section integral with the tubular member.

4,195,516

APPARATUS FOR CONTINUOUSLY MEASURING RATES OF FLOW OF A LIQUID

George Fredericks, Graz, Austria, assignor to Prof. Dr. Dr. Hans List, Graz, Austria

Filed Oct. 3, 1978, Ser. No. 948,276
Claims priority, application Fed. Rep. of Germany, Oct. 3, 1977, 2744444
Int. Cl.² G01F *1/00*
U.S. Cl. 73—194 M **9 Claims**



1. Apparatus for the continuous measurement of the volume M of flow of a liquid of given specific gravity, comprising first and second containers, a liquid flow path in which the first and second containers are serially arranged, said liquid flow path including a first liquid supply pipe containing a first control valve and discharging into the first container, a second liquid flow pipe containing a second control valve and extending from said first container to said second container, and a suction pipe extending from the second container, first means providing in response to the weight of the first container a first electrical output which is a measure of the volume of liquid in the first container, second means providing in response to the weight of the second container a second electrical output which is a measure of the volume of liquid in said second container, said first and second control valves being controlled by said first and second electrical outputs attaining values signifying that the level of liquid in the respective containers has reached pre-arranged maximum and minimum levels, and differentiating circuit means providing from the differentials of said first and second electrical outputs a signal which is a continuous measure of the volume of flow per unit time of liquid provided by the apparatus.

4,195,517

ULTRASONIC FLOWMETER

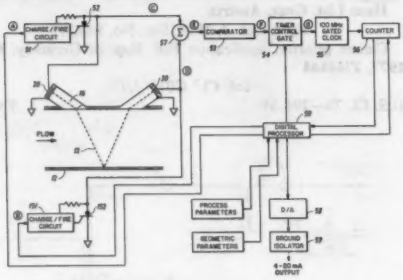
Richard W. Kalinoski, East Providence, R.I., and James H. Vignos, Needham Heights, Mass., assignors to The Foxboro Company, Foxboro, Mass.

Filed Dec. 18, 1978, Ser. No. 970,675
Int. Cl.² G01F *1/66*
U.S. Cl. 73—194 A **33 Claims**

1. An ultrasonic flowmeter for measuring the velocity of a fluid flowing within a conduit comprising:
first and second transducer means secured to said conduit at longitudinally spaced positions for transmitting and receiving acoustic pulses;
said transducer means including respective sonic transmission means arranged to direct acoustic pulses from one of said transducer means to the other through said fluid along a sonic path which includes said transmission means and said fluid;
signal generating means coupled to said transducer means for producing a first transmission of acoustic pulses from said first to said second transducer means and then a second transmission of acoustic pulses from said second to said first transducer means along said sonic path;

means defining within said sonic transmission means at least one acoustic path of known length along which a portion of said first transmission propagates;

said transducer means producing output signals in response to received acoustic pulses corresponding to sonic propagation times along said sonic path between said first and second transducer means and vice-versa and along said acoustic path within said sonic transmission means;



means operable with said signal generating means for measuring said sonic propagation times;

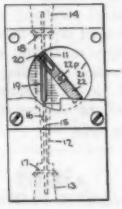
said measured sonic propagation times adapted to be combined in accordance with known physical principles to obtain a measure of flow velocity independent of changes in the sonic velocities in said fluid and in said sonic transmission means.

4,195,518

ARMORED ROTAMETER

Charles E. Fees, Houston, Tex., assignor to Fisher & Porter Company, Warminster, Pa.

Filed Nov. 7, 1978, Ser. No. 958,416
Int. Cl.² G01F 1/24
U.S. Cl. 73—209 **8 Claims**



1. An armored rotameter capable of accurately measuring low flow rates, the rotameter comprising:

A. a metal body provided with a bore defining a vertical flow tube, a lower inlet thereto into which a fluid to be metered is admitted and an upper outlet from which the fluid is discharged;

B. a float disposed in the flow tube and having a guided stem which includes a pin extending laterally therefrom, the pin projecting through a slot formed in the front face of the meter body, the pin riding up and down the slot as the float moves up and down the tube as a function of flow rate;

C. a link magnet external to the meter body and swingable about a center pivot, the pin being coupled to one end of the link to cause the link magnet to swing in a direction and to an extent in accordance with float movement;

D. a non-magnetic pressure plate secured to the front face of the meter body to seal said slot and link; and

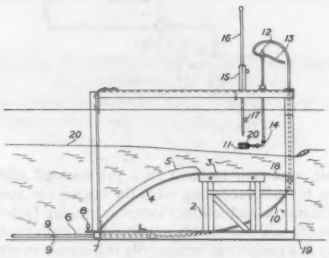
E. a pointer magnet external to the pressure plate and parallel to the link, said pointer magnet being swingable about a center pivot in axial alignment with the link magnet pivot and being in magnetically-attractive relation to the link magnet, whereby as the link magnet swings, its movement is followed by the pointer magnet to indicate flow rate.

4,195,519

MEASUREMENT OF WATER FLOW RATE

John A. Replogle, Tempe; Albert J. Clemmens, Mesa, and Edward D. Bell, Tempe, all of Ariz., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Aug. 31, 1978, Ser. No. 938,624
Int. Cl.² G01F 1/20
U.S. Cl. 73—215 **10 Claims**



1. A method for measuring rate of water flow in channelized, flowing bodies of water, which comprises—

(a) obstructing the flow of water in said body to produce a rise in the water surface upstream from the obstruction,

(b) communicating the rise in said upstream water surface to a point above the obstruction,

(c) measuring at a point above the obstruction the rise in said upstream water surface, said measurement representing the difference between the level of said upstream water surface after obstruction and the top of the obstruction, and

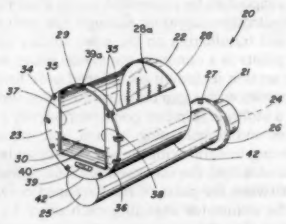
(d) converting said measurement of the rise in upstream water surface to the rate of water flow in said body of water.

4,195,520

PORTABLE FLOW-MEASURING DEVICE

Michael R. Shaver, 4742 Bluffwood North Dr., Indianapolis, Ind. 46208

Filed Oct. 10, 1978, Ser. No. 950,259
Int. Cl.² G01F 1/20
U.S. Cl. 73—215 **12 Claims**



1. A portable flow-measuring device for determining the volumetric flow rate of flow stream in a pipe, said portable flow-measuring device comprising:

a flow conduit being open at one end and sealed closed at the opposite end;

means for funneling all of the flow within the pipe into said flow conduit;

a reservoir member having an open end and a closed end and being in flow communication with said flow conduit; and

a removable weir plate sealingly attached over the open end of said reservoir member.

4,195,521

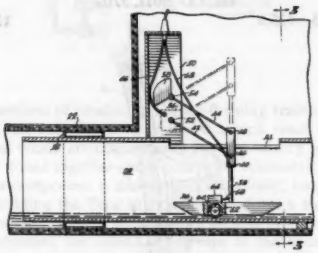
VOLUMETRIC FLOW MEASURING DEVICE

Joseph C. Fitzgerald, 439 Minorca Ave., Coral Gables, Fla. 33134

Filed Sep. 5, 1978, Ser. No. 939,237

Int. Cl.² G01F 1/06

U.S. Cl. 73—227 **10 Claims**



1. For installation in a manhole with a tubular member exiting from the manhole to direct fluid flow past the manhole in a system,

a volumetric flow measuring device for liquid flowing in the system past the manhole, said device comprising:

a control pipe sized for receipt in the tubular member and including seal means to engage the tubular member and to constrain flow past the manhole to a path through the control pipe,

said control pipe defining a flowpath therethrough of predetermined cross sectional area; and

said pipe having an upper surface on a portion extending into the manhole, and said portion having a cutout in said upper surface,

a float member in the control pipe beneath said cutout comprising a buoyant body having an upper surface and a lower surface for rise and fall of the body vertically in line with the cutout depending upon the level of the liquid flowing through the pipe,

liquid flow velocity measuring means comprising paddle wheel means journaled on the float with a portion extending below the lower surface to move in response to fluid flow in the pipe,

means to connect the float to the pipe and to maintain it in vertical alignment with said cutout,

said device including liquid depth measuring means to measure continually the level of the float in the pipe, and

recording means to record the level of the float and the flow velocity, and including means operatively connecting said recording means and said liquid depth measuring means and said liqud flow velocity measuring means.

4,195,522

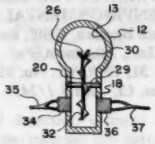
FLOWMETER

Kenneth W. Anderson, Fremont, Calif.; Brent Summerhays, Logan, Utah, and Verl O. Cazier, Lander, Wyo., assignors to Electronic Systems Engineering, Inc., Logan, Utah

Filed Oct. 2, 1978, Ser. No. 947,679

Int. Cl.² G01F 1/06

U.S. Cl. 73—229 **8 Claims**



1. A flowmeter comprising:

a conduit;

a housing formed as a protrusion on the side of the conduit;

rotatable member means housed in the housing, the housing thereby forming an enclosure in fluid communication with the interior of the conduit to accommodate the rotatable member means extending into the conduit, the rotatable member means comprising a circular, planar wheel member having fluid engagement means disposed around the periphery of the wheel, the fluid engagement means comprising a plurality of offset elements formed in the periphery of the wheel, the offset elements comprising segments of the wheel periphery alternately twisted outwardly from the plane of the wheel, thereby forming said fluid engagement means;

a plurality of apertures in the rotatable member means, the apertures being uniformly spaced around the axis of the rotatable member means;

light path means through the apertures when the apertures are at a predetermined position between a light source and a light detector means; and

counter means for counting the number of times the apertures cross the light path means allowing light to be detected by the light detector means.

4,195,523

ULTRASONIC THERMOMETER

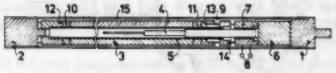
Herman A. Tasman, Karlsruhe, and Ernst E. S. Pätzold, Stutensee-Friedrichstal, both of Fed. Rep. of Germany, assignors to European Atomic Energy Community (Euratom), Luxembourg

Filed Jul. 21, 1978, Ser. No. 926,614

Claims priority, application Fed. Rep. of Germany, Aug. 5, 1977, 2735908

Int. Cl.² G01K 11/24

U.S. Cl. 73—339 A **3 Claims**



1. An ultrasonic thermometer comprising:

an ultrasonic transmission line for receiving ultrasonic mechanical wave signals from a source and reflecting echoes of said signals to a receiver comprising a probe having a first end fixed to a datum and a free end; a tubular jacket extending around said first end and along the length of the line, the jacket permitting sliding movement between said line and said jacket; and means providing fixed datums for

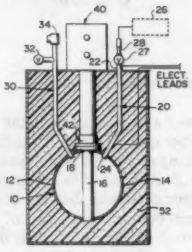
said line and said jacket and for thereby enabling adjacent parts of said line and jacket to move relative to one another as said line and jacket experience changes in temperature, said means including means for clamping said jacket at a location remote from the fixed end of said probe whereby thermal expansions of said line and the jacket occur in opposite directions.

4,195,524

METHOD AND APPARATUS FOR COLLECTING AND STORING ENVIRONMENTAL GASES

Robert G. Hansen, Santa Barbara, Calif., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Oct. 31, 1978, Ser. No. 956,312
Int. Cl.[2] G01N *1/24*
U.S. Cl. 73—421.5 R **11 Claims**



1. A method of collecting and storing a sample of an environmental gas, e.g. air, comprising the steps of:

providing a sample bottle having a metering orifice for admitting the environmental gases;

cooling said sample bottle below the temperature at which said environmental gas condenses to create a partial vacuum in said sample bottle thus drawing said environmental gas into said bottle;

maintaining said temperature of said bottle to prevent evaporation or freezing of said collected sample; and

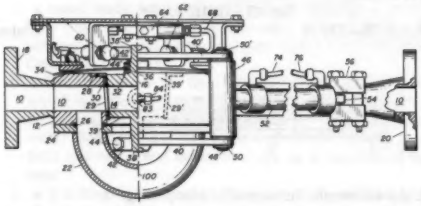
continuing collection of said sample at a constant rate until the desired sample is obtained.

4,195,525

SAMPLING VALVE

David A. George, Park Forest, Ill.; Bernard D. Strauss, Rockaway, and Irving H. Weisman, Flanders, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 23, 1979, Ser. No. 23,109
Int. Cl.[2] G01N *1/10*
U.S. Cl. 73—422 TC **10 Claims**



1. Fail-safe operated bypass sampling valve for use in a hazardous chemical pipeline which comprises:

housing means for providing a continuous flow of chemicals therethrough while extracting a sample from said chemical pipeline;

plug means for removing a sample quantity of material from said chemical pipeline without restricting said continuous flow of said chemical pipeline;

piston means for rotating said plug means from a normally closed non-sampling position to a sampling position and back to a normally closed non-sampling position;

supply means for energizing said piston means;

first valve means for connecting said supply means to said piston means when an actuator lever of said first valve means is manually actuated;

second valve means for changing the direction of movement of said piston means from a rod-extended sampling position to a rod-withdrawn position wherein said plug means, in said rod-withdrawn position, is maintained in a normally closed sampling position; and

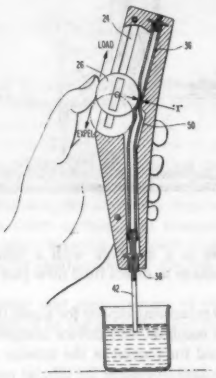
third valve means connected to said supply means and said second valve means operatively positioned to be responsive to movement of moving said piston means and said plug means from a sampling position to a normally closed fail-safe sampling position.

4,195,526

HAND-HELD PIPETTER

Lynn G. Amos, Painted Post, N.Y., and Robert T. Buck, Raleigh, N.C., assignors to Corning Glass Works, Corning, N.Y.

Filed Feb. 9, 1978, Ser. No. 876,340
Int. Cl.[2] B01L *3/02*
U.S. Cl. 73—425.6 **12 Claims**



1. A pipetter for controllably drawing a volume of fluid from a supply into a capillary tube, comprising:

a housing having a first and a second end and a support surface extending therebetween;

a resilient tube disposed in said housing and extending over said support surface;

adapter means for replaceably receiving a sampling pipe to be filled with a fluid, said adapter means defining a passage for coupling the interior of the sampling pipe with the interior of said tube;

compression wheel means for compressing said tube against said support surface at a point intermediate the ends thereof, said compression wheel means being adapted to be moved with respect to said support surface by the user of the pipetter;

mounting means in said housing for guiding said compression wheel means in a direction generally parallel to said support surface;

whereby the point at which said tube is compressed may be continuously varied to create a lowered pressure in said adapter passage; and

means to preclude substantial compression of said tube at one position of said wheel, whereby said tube relaxes to its uncompressed state when said wheel is in said position.

4,195,527
METHOD OF AND APPARATUS FOR PRODUCING A FOAM-FORMING REACTION MIXTURE

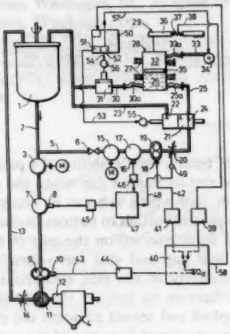
Wilfried Ebeling, Cologne; Klaus Schulte, Leverkusen, and Dieter Kreuer, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 17, 1978, Ser. No. 906,798

Claims priority, application Fed. Rep. of Germany, May 27, 1977, 2724132

Int. Cl.[2] G01N *9/02*

U.S. Cl. 73—434 **5 Claims**



1. A method of producing a foam-forming reaction mixture from at lest two liquid components which react with each other and which are continuously fed to a mixing zone where they are mixed together and wherein the volumetric flow of at least one component is measured continuously, comprising

(A) dividing the flow of components from a storage container into a main stream and a subsidiary stream;

(B) adjusting the subsidiary stream to the same working pressure as that of the main stream just before the main stream's introduction into a mixing zone;

(C) measuring the volumetric flow of the subsidiary stream which passes through during a predetermined time interval;

(D) determining the weight of mixture which has passed through during the same predetermined time interval;

(E) determining the density of the component therefrom as the quotient of said weight and said volume;

(F) measuring the volumetric flow of the main stream; and determining the mass flow of the main stream of the component as the product of the density of the component determined in step (E) and the volumetric flow of the main stream.

(G) Comparing the determined value of the mass flow of the main stream with a predetermined desired value.

4,195,528
FAULT DETECTION DEVICE

Yasuhide Takahashi, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

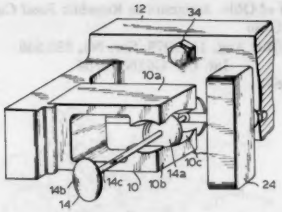
Filed Jul. 14, 1978, Ser. No. 924,829

Claims priority, application Japan, Jul. 18, 1977, 52/86429

Int. Cl.[2] G01H *13/00*

U.S. Cl. 73—579 **9 Claims**

1. A fault detection device for detecting a fault in a body, said device comprising: a resonator resonating at a predetermined vibration frequency at which the body in which the fault is to be detected vibrates when a fault is present in it, a detection element carried by said resonator and held against movement by said resonator at vibration frequencies other than the resonant frequency of said resonator, and a resilient member engaging said detection element and urging said detection element in a predetermined direction, said resonator freeing said detection element sufficiently when vibrating at the resonant frequency for the resilience of said resilient member to move said detection element in said predetermined direction to thereby indicate the detection of a fault in the body.



4,195,529
DEVICE FOR MOVING THE PICKUPS OF A FLAW DETECTION SYSTEM THROUGH A PIPELINE

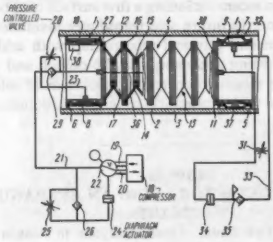
Ashot A. Madoian, prospekt Pobedy, 16, kv. 28; Viktor G. Kantsedalov, prospekt Pobedy, 103, kv. 95; Petr B. Samoilenko, and Valentin P. Samoilenko, both of ulitsa Vl. Shevchenko, 29, kv. 19, all of Gorlovka Donetskoi oblasti, U.S.S.R.

Filed Jun. 15, 1978, Ser. No. 915,890

Claims priority, application U.S.S.R., Jun. 24, 1977, 2493651; Jun. 29, 1977, 2500413[I]

Int. Cl.[2] G01N *29/04*

U.S. Cl. 73—638 **7 Claims**

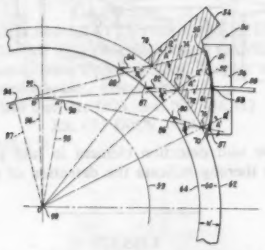


1. A device for stepwise successively advancing flaw detection pickups through a pipeline, including: a compressor; a pressure delivery connection of said compressor; a selectively connected intake of said compressor; two support end assemblies for supporting said flaw detection pickups and being adapted to alternatingly engage the internal surface of the pipeline, each said support end assembly having a cup-shaped sleeve with a lateral surface and a bottom, and an elastic sheath accommodated on said lateral surface of said sleeve and defining therewith an annular chamber; a motion member having its length variable upon either one of said support end assemblies having engaged the surface of the pipeline, said motion member interconnecting said two support end assemblies and including a bellows secured between the respective said bottoms of said two sleeves: an automatic control system; said chambers and said bellows communicating with said compressor through a fluid line and said automatic control system includes value means so arranged that at the initial stage of each successive advancing step a leading one of said two chambers is connected to the ambient atmosphere, while a trailing one of said two chambers and said bellows are connected to said pressure delivery connection of said compressor, whereas at the end of the step said trailing chamber and said bellows are connected to said intake connection of said compressor, while said leading chamber is under pressure.

4,195,530
ULTRASONIC INSPECTION

Benjamin J. Ross, Cleveland Heights; James M. Toth, Lyndhurst; Richard F. Abramczyk, Brunswick, and Gerald R. Coy, Medina, all of Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio

Filed Aug. 14, 1978, Ser. No. 933,668
Int. Cl.² G01N *29/04*
U.S. Cl. 73—638 **20 Claims**



1. An ultrasonic flaw detector for detecting irregularities in an object having at least a segment of an annular cross-section such as a pipe comprising:

(a) a transducer for sending a wave of ultrasonic energy into such object; said transducer being configured such that at any given point in a plane of transverse object cross-section the energy impinges such object at a non-radial angle of incidence substantially equal to the angle of incidence of every other point in the plane;

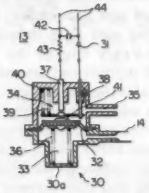
(b) transmission means including a first surface coacting with said transducer to insure said transducer maintains a substantially constant physical relationship with said object while transmitting said energy to the object; and

(c) interpretive means to correlate reflections of said ultrasonic signals with irregularities in the structure of said object.

4,195,531
PRESSURE DETECTOR USING AN AVERAGING CIRCUIT

Kenji Okamura, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Dec. 21, 1978, Ser. No. 971,660
Claims priority, application Japan, Dec. 29, 1977, 52-159505
Int. Cl.² G01L *9/00*
U.S. Cl. 73—723 **5 Claims**



1. A pressure detector comprising:

a housing;

a diaphragm in said housing to define a chamber with the walls of said housing, said chamber being in communication with a source of fluid;

means for urging said diaphragm so that the same moves when the magnitude of the pressure of fluid in said chamber reaches a predetermined level;

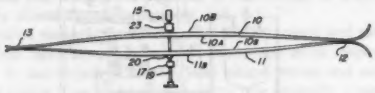
means for generating an electrical pulse in response to the movement of said diaphragm so that the duration of said pulse is proportional to the pressure of fluid in said chamber; and

means for converting the electrical pulses into a voltage signal of which the magnitude is proportional to a mean value of the durations of said pulses.

4,195,532
SKI STIFFNESS AND CAMBER INDICATOR

Edward A. Pauls, Rte. 1, Box 615P, Excelsior, Minn. 55331

Filed Jul. 3, 1978, Ser. No. 921,275
Int. Cl.² G01N *3/20*
U.S. Cl. 73—849 **9 Claims**

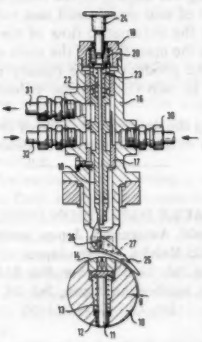


1. A method of testing the flexibility of a pair of skis which have a camber at rest forming a gap when the skis are placed bottom to bottom, and which skis can be compressed toward each other when placed bottom to bottom to change the gap as a function of the force exerted on the pair of skis tending to compress them, said gap and said force forming parameters related to the flexibility of the skis, comprising the steps of compressing the bottom to bottom skis toward each other under a force applied and sensed adjacent the center portions of the skis, and monitoring at least one of the parameters as the skis are compressed until the one parameter is at a desired level and correlating the other parameter value with a skier's weight to determine the ski flexibility as a measure of suitability of use by the intended skier.

4,195,533
OPERATIVE MEMBERS FOR USE IN A QUICK SHUT-OFF APPARATUS

Helmut Brobeck, Hessheim, Fed. Rep. of Germany, assignor to Aktiengesellschaft Kuhnle, Kopp & Kausch, Frankenthal, Fed. Rep. of Germany

Filed Apr. 5, 1978, Ser. No. 893,763
Claims priority, application Fed. Rep. of Germany, Apr. 6, 1977, 2715421
Int. Cl.² G05G *17/00*
U.S. Cl. 74—3.2 **10 Claims**



1. An operative member for use in quick shut-off apparatus for a rotating machine, the member being formed substantially of a solid material which is spark-free when subjected to impact and for which:

$$K=(\epsilon\cdot\sigma)/(E\cdot\gamma)\geq 3$$

where

ϵ=the breaking elongation of the solid material in %

σ=the breaking stress of the solid material in Kp (kiloponds) per square centimeter

E=the modulus of elasticity of the solid material in Kp (kiloponds) per square centimeter and

γ=the specific weight of the solid material in grams per cubic centimeter.

4,195,534

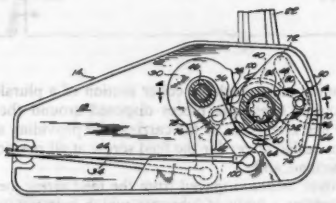
SINGLE LEVER REMOTE CONTROL

Anthony P. Prince, Waukegan, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Division of Ser. No. 789,798, Apr. 22, 1977. This application Sep. 25, 1978, Ser. No. 945,647

Int. Cl.[2] G05G *9/08*; F16H *21/44*

U.S. Cl. 74—491 **5 Claims**



1. A throttle control for an engine having a throttle, said control comprising a housing, a shaft member supported within said housing for rotation relative to said housing, a control lever connected to said shaft member for common rotation therewith relative to a neutral position, a throttle lever movably mounted on said housing and adapted to actuate the engine throttle in response to movement of said throttle lever, a throttle drive member including a drive pin and mounted on said shaft member for common rotation therewith in response to movement of said control lever from the neutral position, a cam member carried by said throttle drive member and connected between said throttle lever and said throttle drive member, said cam member including a cam track receiving said drive pin and having a shape effective to displace said cam member relative to said shaft member and to said throttle drive member to move said throttle lever in response to rotation of said throttle drive member, and guide means on said cam member and on said throttle drive member for guiding translatory movement of said cam member relative to the rotational axis of said shaft member in response to movement of said drive pin in said cam track.

4,195,535

POSITIONING DEVICE FOR A VEHICLE STEERING COLUMN

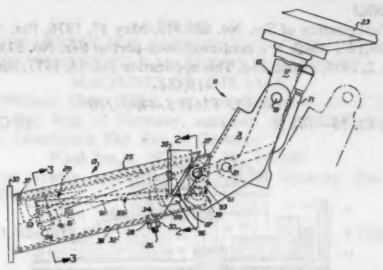
Robert H. Broucksou, Danville, Ky., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jan. 23, 1978, Ser. No. 871,658

Int. Cl.[2] B62D *1/18*; G05G *5/16*

U.S. Cl. 74—493 **10 Claims**

1. In a positioning device for a steering column of a vehicle, the positioning device including a stationary tube member attached to the vehicle and a movable tube member telescopically mounted within the stationary tube member and fixed to the steering column, and a wedge member movable along said movable tube between a first position wherein said wedge member is out of engagement with said stationary tube and a second position wherein said wedge member is in engagement with said stationary tube; the improvement wherein said movable and stationary tube members are substantially rectangular in cross section, said wedge member is in the form of a tetrahedron, and said movable tube member has a bearing surface formed at one corner thereof of a shape complimentary to one side of said tetrahedral wedge member, said wedge member



being movable along said movable tube member with one side of said wedge member in contact with said bearing surface.

4,195,536

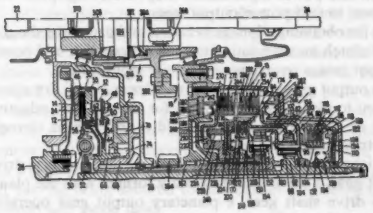
PLANETARY TRANSMISSION

Julius A. Clauss, Birmingham; John S. Ivey, Bloomfield Hills, both of Mich., and Richard L. Smirl, Arlington Heights, Ill., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Dec. 8, 1976, Ser. No. 748,572

Int. Cl.[2] F16H *57/10, 37/08*

U.S. Cl. 74—759 **2 Claims**



1. A transmission mechanism for an engine driven vehicle having four forward ratios and reverse and including a pair of simple planetary gear sets; a single input shaft connected to said gear sets; an engageable input means adapted to connect said engine to said input shaft; said gear sets each having a sun gear element, a ring gear element, and a planetary carrier element having pinion gears meshing with said sun and ring gears; said input shaft being connected to a sun gear for one of said planetary sets; a first clutch means engageable to connect said input shaft to said planetary carrier for said one planetary set thereby locking up said one planetary gear set when engaged; a second clutch means engageable to connect the ring gear of said one gear set with the carrier element of said other gear set; a first brake means for the carrier element of said one gear set and the ring gear of said other gear set; a second brake means for the sun gear of said other gear set; an output shaft connected to said carrier element of said other gear set; and a one-way engaging device provided between said second brake means and said ring gear of said one gear set; whereby first ratio is obtained by engagement of said input means and said second brake means, second ratio is obtained by engagement of said input means, said second brake means and said second clutch means, and fourth ratio is obtained by engagement of said first and second clutch means.

4,195,537

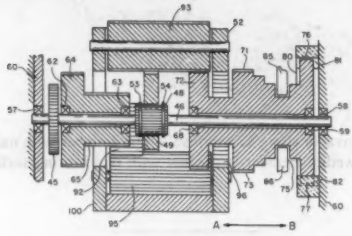
AUTOMATIC TRANSMISSION

John A. Sessler, 1600 W. Townline Rd., Rte. #2, Milton, Wis. 53563

Continuation of Ser. No. 686,915, May 17, 1976, Pat. No. 4,049,103, which is a continuation-in-part of Ser. No. 511,443, Oct. 2, 1974, abandoned. This application Jul. 14, 1977, Ser. No. 815,654

Int. Cl.[2] F16H *3/44, 57/10*

U.S. Cl. 74—781 R **11 Claims**



1. An automatic transmission apparatus for cooperation with a power input means and power output means and interposed therebetween comprising;

power input connection means for connecting said power input means into said transmission apparatus;

dry clutch means operably connected to said power input connection means;

said dry clutch means comprising at least one shoe and drum and having means responsive to centrifugal force for causing said at least one shoe to engage said drum only when said power input means is up to driving speed with respect to said power output means;

means for obtaining slippage between said drum and shoes of said clutch means relative to each other when said power output means overruns said power input means;

clutch output means connecting said drum of said dry clutch means to planetary drive means for alternatively selecting two or more drive ratios to said output means through electrical activation means,

said planetary drive means comprising a planetary drive shaft gear, a drive shaft integrally formed with the planetary drive shaft gear, a planetary output gear operably connected to said power output means, planetary gear carrier means fixed to the drive shaft and sun gear shifting means,

first and second intermeshing planet gears journalled on the planetary gear carrier means,

a first sun gear axially slidably journalled on the shaft and continuously meshing with the second planet gears,

means for sliding the first sun gear to selectively lock it to the planetary gear carrier means,

a second driven sun gear journalled on the shaft and continuously meshing with the first planet gears, and

said sun gear shifting means alternating the transmittal of torque between said drive ratio in cooperation with said planetary gear carrier means for transmittal of said torque to said planetary output gear means and in turn said power output means.

4,195,538

MACHINE TOOL FEED SCREW ASSEMBLY

Ivan R. Brown, Horseheads, N.Y., assignor to Hardinge Brothers, Inc., Elmirs, N.Y.

Filed May 18, 1978, Ser. No. 907,201

Int. Cl.[2] B23B *21/00, 3/36;* F16B *11/00*

U.S. Cl. 82—27 **12 Claims**

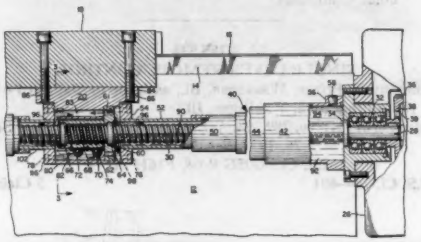
1. A protection assembly for machine tool feed screws, comprising:

(a) a machine tool having a slide guide supported on a bed

(b) a movable carriage and cross slide reciprocally mounted on the slide guide

(c) an elongated feed screw supported on the bed and disposed parallel to the slide guide

(d) the carriage being connected to the feed screw such that it is moved along its length



(e) including an expandable cover section of a plurality of interlocked telescopic pieces disposed around the feed screw and connected to the carriage for providing a continuous sealed cover for the feed screw at all positions of the carriage, and

(f) the cover means is spaced from the feed screw member and contains a body of lubricant which is in continuous contact with the feed screw.

4,195,539

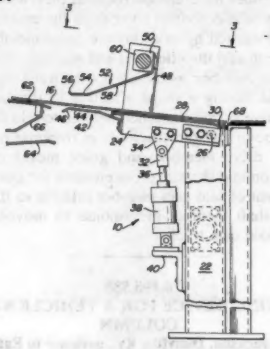
WEB DIVERTER

Robert E. Coburn, Warminster, Pa., assignor to Molins Machine Company, Inc., Cherry Hill, N.J.

Filed Jun. 16, 1978, Ser. No. 916,315

Int. Cl.[2] B26D *3/08;* B65H *29/58*

U.S. Cl. 83—44 **10 Claims**



1. Apparatus between a shear and a slitter scorer for selectively diverting the web which has been sheared transversely to upper and lower paths in the slitter scorer comprising:

(a) a web support member having an upstream portion and a downstream portion, means mounting said support member for movement from a first position wherein a web is being directed to an upper path and a second position wherein a web is being directed to a lower path,

(b) means for contacting one surface of the trailing end portion of a severed web including upper and lower web guides mounted on said support member adjacent the downstream portion thereof, said web guides extending downstream from said support member and forming therebetween a channel through which a web can pass, said web guides being resilient so that when a web is

sheared transversely the upper or lower guides are in flexed contact with the trailing edge portion of the web traveling along one of said paths and then flex to guide the leading edge portion of the web to the other path,

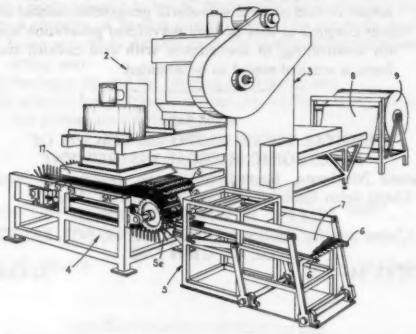
(c) power means connected to said support member for selectively moving said support member between the first position wherein said lower web guide prevents a web from being directed to the lower path and the second position wherein said upper web guide prevents a web from being directed to said upper path.

4,195,540

FIN COLLECTION AND TRANSPORT APPARATUS

Lawrence A. Franks, Sturgis, Mich., assignor to Burr Oak Tool & Gauge Company, Sturgis, Mich.

Filed May 11, 1978, Ser. No. 905,022
Int. Cl.[2] B65H *35/06*; B23G *7/16*; B26D *7/06*
U.S. Cl. 83—95 **11 Claims**



1. In an apparatus for producing, collecting and transporting platelike fins for heat exchangers, said apparatus including fin forming means for simultaneously forming a plurality of fins in adjacent side-by-side relationship from sheet material, said fin forming means including means for supporting said plurality of formed fins in said adjacent side-by-side relationship, and fin handling means positioned under said supporting means for collecting and transporting the formed fins, said fin handling means comprising:

endless conveyor means having an upper reach positioned adjacent said supporting means and movable relative thereto in a direction substantially transverse to the direction of movement of said formed fins as discharged from said fin forming means;

stationary frame means having said endless conveyor means movably supported thereon;

a plurality of elongated fin collecting means fixed to and projecting outwardly from said endless conveyor means, said plurality of fin collecting means being spaced a predetermined distance apart throughout the lengthwise direction of said endless conveyor means, said predetermined distance being equal to the centerline-to-centerline distance between adjacent fins as supported by said supporting means, each said collecting means projecting outwardly in substantially transverse relationship to said endless conveyor means for permitting a plurality of fins to be collected thereon in stacked relationship;

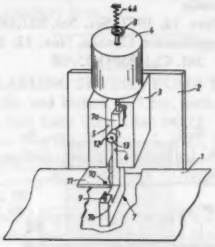
drive means connected to said endless conveyor means for effecting intermittent, steplike, unidirectional movement thereof so that said upper reach is intermittently advanced by an amount equal to said preselected distance or a whole number multiple thereof, said drive means being synchronized with the operation of said fin forming means so that each intermittent advance of said upper reach causes said fin collecting means to be intermittently and sequentially positioned adjacent different locations on said fin forming means so that fins discharged from said fin forming means onto said endless conveyor means are sequentially stacked on said collecting means.

4,195,541

APPARATUS FOR PERFORATING WEBS OF PHOTOSENSITIVE MATERIAL IN COPYING MACHINES OR THE LIKE

Horst Wildner; Heinz Kölbl, and Alois Zachmeier, all of Munich, Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed Jun. 2, 1978, Ser. No. 912,057
Claims priority, application Fed. Rep. of Germany, Jun. 2, 1977, 7717386
Int. Cl.[2] B26D *5/08*
U.S. Cl. 83—577 **9 Claims**



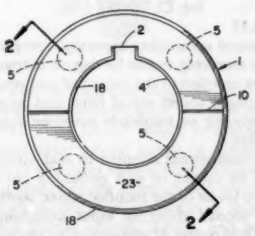
1. Apparatus for applying indicia to selected portions of a web of photosensitive material in a copying machine wherein the web is transported along a predetermined path, comprising a prime mover having a reciprocable output element; a carrier including a first portion connected with said output element and a second portion spaced apart from said first portion; an indicia-applying tool on said second portion of said carrier, said output element being movable between first and second positions in which said tool is respectively remote from said path and applies an indicium to the web in said path; a stationary holder having two guide faces extending in parallelism with the direction of reciprocatory movement of said output element; and an antifriction bearing rotatable about an axis which is substantially normal to the axis of said output element, said bearing being secured to said carrier and being disposed between said guide faces.

4,195,542

QUICK DETACHABLE MAGNETIC SPACING MEANS FOR ROTARY SLITTING KNIVES

Roy J. Zimmer, Rocky River, Ohio, assignor to Cowles Tool Company, Cleveland, Ohio

Filed Nov. 24, 1978, Ser. No. 963,380
Int. Cl.[2] B26D *1/24*
U.S. Cl. 83—664 **9 Claims**



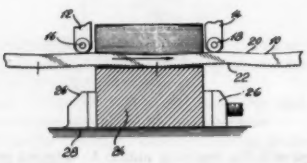
2. In an assembly of rotary knives keyed to an arbor which

has a central axis with spacing means for spacing the knives from each other axially on the arbor when the assembly is forcibly compressed axially and wherein said spacing means may comprise annular, right, circular, cylindrical parts which are movable onto and removable from said arbor only axially, the improvement that said means also comprises pairs of semi-annular parts which may be removed from and placed upon said arbor radially when the assembly is free of axial compression and that said radially removable parts are magnetically attached in said assembly when said assembly is free of axial compression.

4,195,543
BAND SAW

Warren J. Tapply, Fitchburg, Mass., and Garth L. Smith, Granby, Canada, assignors to Wallace Murray Canada Limited, Granby, Canada

Filed Nov. 14, 1977, Ser. No. 851,199
Claims priority, application Canada, Nov. 12, 1976, 265537
Int. Cl.[2] B23D *55/08*
U.S. Cl. 83—794 **6 Claims**



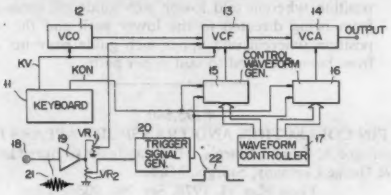
1. A band saw for cutting hard metals comprising an elongated ribbon adapted to be used on a band saw machine with pressure feed, the machine includes a workpiece holder, a movable band saw head, said ribbon being mounted for sawing movement on said head, the ribbon including a back edge and a toothed edge, the ribbon having a sinoidal wave pattern in the plane of the ribbon and provided continuously, the wavelength of the wave pattern being selected in the range of 6 inches to 24 inches with a pitch selected in the range of 0.010" to 0.050", the head including means for applying pressure to the back edge of the ribbon, the wavelength and the pitch of the ribbon being such as to avoid chatter based on the speed of travel of the ribbon, the pressure applied to the back edge of the ribbon during the cutting and the average length of the cut to be made in the workpiece to be cut while providing a more efficient cut through the workpiece.

4,195,544
ELECTRONIC MUSICAL INSTRUMENT WITH EXTERNAL SOUND CONTROL FUNCTION

Masahiko Koike, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Namamatsu, Japan

Filed Mar. 20, 1978, Ser. No. 888,001
Claims priority, application Japan, Mar. 25, 1977, 52/33034
Int. Cl.[2] G01H *1/02*
U.S. Cl. 84—1.19 **5 Claims**

5. Musical sound controlling apparatus comprising:
sound signal receiving means having an output;
circuit means coupled to the output of said receiving means for rectifying a sound signal from said receiving means and for deriving an amplitude envelope signal from said sound signal;
switching circuit means coupled to said circuit means for switching an output of said switching circuit means in response to levels of the rectified sound signal and having first and second different input switching levels for switching said output of said switching circuit means from a first voltage level to a second voltage level and from the second voltage level to the first voltage level, respectively, the first input switching level being higher than the second input switching level;
control waveform generation means responsive to the second voltage level of said output of said switching circuit means for producing a control waveform;

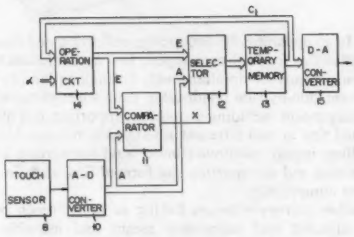


means for coupling said output of said switching circuit means to said control waveform generation means; and
means coupled to said control waveform generation means for controlling, in accordance with said control waveform, a musical sound to be sounded.

4,195,545
DIGITAL TOUCH RESPONSE CIRCUIT OF ELECTRONIC MUSICAL INSTRUMENT

Tetsuo Nishimoto, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Feb. 16, 1978, Ser. No. 878,481
Claims priority, application Japan, Feb. 18, 1977, 52-16828
Int. Cl.[2] G10H *1/02*
U.S. Cl. 84—1.26 **12 Claims**



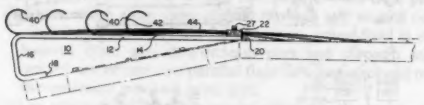
1. In an electronic musical instrument having touch sensor means producing touch information varying with time in accordance with a player's finger touch on a key, a digital touch signal processing circuit comprising:
temporary memory means, having inputs and outputs, for storing temporarily therein input information applied to the inputs and sending the input information to the outputs as output information which is utilized to control a musical tone to be produced;
arithemetic operation means having inputs coupled to the outputs of said temporary memory means for arithmetically operating on the output information of the temporary memory means to produce output information having a difference in value from said output information of the temporary memory means;
comparison means for effecting comparison between the output information of said arithmetic operation means and said touch sensor means; and
selection circuit means coupled to receive the outputs of said arithmetic operation means and said touch sensor means and being responsive to the output of said comparison means for selectively coupling the output information of said arithmetic operation means and said touch sensor means to the inputs of said temporary memory means;

the outputs of said temporary memory means being coupled to control the musical tone to be produced.

4,195,546
CHORD SELECTOR

Stanley Urbank, 104 Morton St., New Eagle, Pa. 15067

Filed Feb. 26, 1979, Ser. No. 15,121
Int. Cl.[2] G10D *3/04*
U.S. Cl. 84—318 3 Claims



1. A chord selector for a stringed musical instrument comprising:

(a) a body adapted to lay on the head of the instrument and

(b) a plurality of flexible arms supported by the body, each being separately slidable along the length of the associated string, and

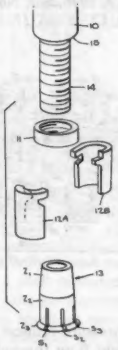
(i) having a tip end for pressing on a string and

(ii) adapted for yieldingly contacting the body when the tip end presses on a string.

4,195,547
ANCHOR BOLT ASSEMBLY

Louis N. Giannuzzi, 4 Shelter Dr., Cos Cob, Conn. 06807

Filed Aug. 3, 1978, Ser. No. 930,741
Int. Cl.[2] F16B *13/06*
U.S. Cl. 85—74 16 Claims



1. An anchor bolt assembly adapted to fasten a fixture having a hole therein of nominal diameter against the surface of masonry or other material having a hole of substantially the same diameter drilled therein, said assembly comprising:

A. a bolt having a diameter slightly smaller than that of the masonry hole, the bolt being provided with an enlarged head engageable by a torque tool for turning the bolt, and a threaded rear section of reduced diameter;

B. an expansible shell loosely encircling the upper portion of the rear section to define an annular space therebetween, the unexpanded diameter of said shell being substantially the same as the diameter of the bolt; and

C. a wedge nut provided with an internally-threaded bore threadably received on the lower portion of the rear section, said nut having an upper conical zone whose maximum diameter does not exceed the diameter of the bolt and a compressible and expansible lower gripper ring zone whose normal maximum diameter is greater than that of said masonry hole, said ring zone having slots cut therein to define spring fingers which when deflected inwardly create a constricted bore whose internal threads grip the mating threads at the end of said rear section of the bolt to provide a locking action when the end of said rear section is turned into the ring zone, the anchor bolt assembly being tappable through the fixture hole into the masonry hole until it is fully inserted therein with said bolt head lying against said fixture, the gripper ring zone then being compressed by the wall of the masonry hole to prevent rotation of the wedge nut whereby when the bolt is then turned by the tool, the wedge nut then advances axially toward said shell and the conical zone thereof enters said annular space to expand the shell and force it outwardly against the wall of the masonry hole to create a first anchoring force, the expansion of the ring zone when the end of the rear section is turned therein creating a second anchoring force resisting withdrawal of the bolt from the masonry hole.

4,195,548
BLASTING SLURRY PUMP TRUCK

Merrill A. Cook, and Robert B. Clay, both of 2026 Beneficial Life Tower, Salt Lake City, Utah 84111

Division of Ser. No. 756,242, Jan. 3, 1977, Pat. No. 4,102,240.
This application Feb. 9, 1978, Ser. No. 876,336
Int. Cl.[2] C06B *21/00*
U.S. Cl. 86—1 R 2 Claims

1. The method of operating a pump truck for the mixing and loading of emulsifiable liquids and free-flowing solids to form slurry blasting agents which comprises matching the freezing and/or fudge points of the fuel liquid and the oxidizer liquid while maintaining both the liquids under a predetermined temperature profile during mixing and loading.

4,195,549
PINTLE WIRE FOR HIGH LOAD HINGE CONNECTIONS

Wilhelm Schuster, Frankfurt; Klaus Wollmann, Eschhofen, and Jürgen Stahl, Frankfurt, all of Fed. Rep. of Germany, assignors to Filztuchverwaltungs-GmbH, Mörfelden-Walldorf, Fed. Rep. of Germany

Continuation of Ser. No. 192,008, Oct. 26, 1971, abandoned.
This application Aug. 1, 1974, Ser. No. 493,980
Claims priority, application Fed. Rep. of Germany, Oct. 30, 1974, 2053273
Int. Cl.[2] D04C *1/06, 1/12*
U.S. Cl. 87—1 3 Claims

1. A pintle wire for high load hinge connections, especially of textile webs and transmission belts, which includes in combination a braided inner tubular sheath of synthetic monofilaments, a braided outer tubular sheath of synthetic fibers, the monofilaments of said inner sheath having a diameter from 5 to 20 times the diameter of the fibers of said outer sheath, a hydrolysis-resistant synthetic plastic material impregnating and embedding said tubular sheaths therein, and polytetrafluoroethylene incorporated in said synthetic plastic to form a lubricant therein.

4,195,550
PROPELLENT CHARGE IGNITER FOR CASELESS CARTRIDGES OF SEPARATELY LOADED AMMUNITION

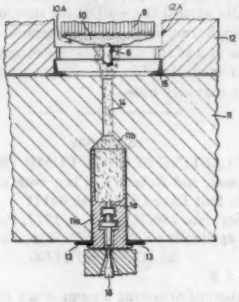
Wolfram Witt, and Karlheinz Reinelt, both of Duesseldorf, Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Duesseldorf, Fed. Rep. of Germany

Filed May 4, 1978, Ser. No. 902,669

Claims priority, application Fed. Rep. of Germany, May 27, 1977, 2723983

Int. Cl.[2] F41F *13/00*

U.S. Cl. 89—27 B **4 Claims**



1. A propellent charge igniter for caseless cartridges of separately loaded ammunition having an ignition chain, comprising in combination,

a movable breech block having a first bore

a cartridge case mounted in said first bore of said breech block

a secondary charge disposed in a piercable bag material;

a booster charge including at least one projectile axially aligned therewith disposed in said cartridge case, which on firing is adapted to pierce said bag material whereby the gases generated by the booster charge are adopted to to ignite said charge;

an ignition capsule operatively and coaxially mounted in said cartridge case;

said cartridge case has a base portion and a top portion, said top portion being disposed most proximate to said secondary charge;

said base portion, having an axially extending second bore; and

said ignition capsule axially extending in said second bore.

4,195,551
HYDRAULIC CONTROL VALVE INCLUDING ELECTROMAGNETIC DETENT

Herbert H. Schmiel, Fridley, Minn., assignor to Gresen Manufacturing Company, Minneapolis, Minn.

Filed Jun. 23, 1977, Ser. No. 809,473

Int. Cl.[2] F16K *31/06, 31/44*

U.S. Cl. 91—358 A **10 Claims**

1. A hydraulic control device comprising:

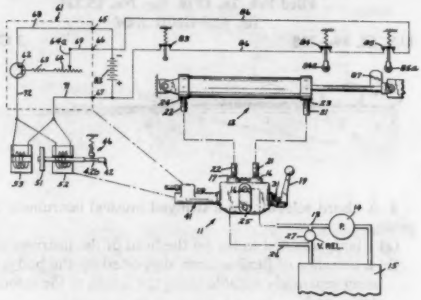
(a) control valve means having fluid inlet and outlet means and including a movable control element for controlling the flow of hydraulic fluid from the inlet means to the outlet means, said control element having at least one limit position;

(b) electromagnetic magnetic means energizable by electric current and disposed to define said one limit position;

(c) armature means associated with the control element, the armature means being movable with the control element and disposed for movement into and out of engagement with the electromagnetic means;

(d) said electromagnetic means being constructed so that, upon energization, it holds the armature means upon being contacted thereby, whereby the control element is held in said limit position;

(e) electrical circuit means including variable resistor means for varying the current to the electromagnetic means to adjustably vary the magnitude of the force generated by



the electromagnetic means, the variable resistor means comprising an externally accessible adjustment screw disposed in a recessed access opening in the device;

(f) and a removable plug seal for the recessed access opening.

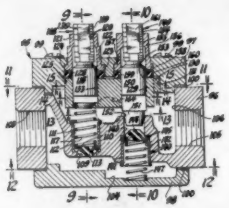
4,195,552
PRESSURE REDUCER AND FLOW CONTROL VALVE

James A. Neff, Bloomfield Township, Oakland County, Mich., assignor to Mac Valves, Inc., Wixom, Mich.

Filed Dec. 3, 1976, Ser. No. 747,421

Int. Cl.[2] F16K *17/18*

U.S. Cl. 91—443 **41 Claims**



1. In a combination pressure reducer and flow control air valve for controlling fluid flow through a fluid flow circuit which includes a fluid controlled apparatus, the combination comprising:

(a) a valve body and cover means having an upstream port for connection to a source of pressurized fluid, and a downstream port for connection to a fluid controlled apparatus in said fluid flow circuit, and two parallel fluid flow passages interconnecting said ports;

(b) an adjustable differential pressure valve means operatively mounted in a first one of said two parallel fluid flow passages to provide a reduced downstream pressure at the downstream pressure port when the control action of the fluid is in a direction of fluid passing through said first one of said two parallel fluid flow passages and the fluid controlled apparatus is in a static condition, and to maintain said reduced downstream pressure at a fixed differential relative to the pressure at the upstream port during said static condition;

(c) said adjustable differential pressure valve means includes a valve seat, a valve element, a spring means disposed in engagement with said valve element for normally biasing

said valve element into engagement with said valve seat, and a valve stem movably mounted in the valve for engagement with the spring means for adjusting the pressure of said spring means on the valve element for determining said fixed differential pressure between the upstream and downstream ports;

(d) a check valve means operatively mounted in the second one of said two parallel fluid flow passages and operative to check the flow of fluid through said second one of said two parallel fluid flow passages when fluid is flowing through said first one of said two parallel fluid flow passages, and to allow flow of fluid through said second one of said two parallel fluid flow passages when fluid is exhausted from said downstream port and through said second one of said two parallel fluid flow passages and out the upstream pressure port; and,

(e) an adjustable fluid flow control valve means operatively mounted in one of said two parallel fluid flow passages to provide a metering action to the flow of fluid through the passage in which the adjustable fluid flow control valve means is mounted.

4,195,553

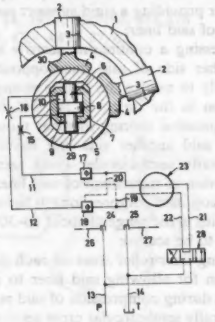
FLUID-DISPLACEMENT RADIAL PISTON MACHINE

Jurgen Klie, Sprockhövel, Fed. Rep. of Germany, assignor to D. Duesterloh GmbH, Sprockhoevel, Fed. Rep. of Germany

Filed May 16, 1978, Ser. No. 906,646

Int. Cl.[2] **F01B** *1/06;* **F04B** *1/28*

U.S. Cl. 91—497 **16 Claims**



1. A fluid displacement radial piston machine comprising, in combination, a support; a shaft mounted on said support for rotation about a rotary axis; an eccentric member having a contact surface extending about an eccentric axis; means for mounting said eccentric member on said shaft for parallel displacement of said eccentric axis radially of said rotary axis, including means defining a radially elongated compartment in said shaft and a piston component having a piston portion mounted for longitudinal displacement in said compartment and sealingly subdividing the same in two actuating chambers, and two displacing portions each extending through one of said actuating chambers and sealingly radially beyond said shaft and connecting said piston portion with said eccentric member; a plurality of working pistons each mounted in said support for reciprocation substantially radially of said rotary axis and having each an engaging surface which engages said contact surface of said eccentric member; means for displacing said piston component, including means in said shaft for bounding two passages each communicating with one of said actuating chambers, a pressurized fluid source, and means for communicating said source with a selected one of said passages only for a time period required to displace the piston component into any selected position thereof relative to said shaft, including a rotary transmission interposed between said support and said shaft; and two check valves each interposed in one of said passages, arranged so as to open and close in dependence on the pressure prevailing in the other of said passages, and operative for interrupting the communication of the respective actuating chamber with said rotary transmission to maintain said piston component in said selected position thereof outside of, and for establishing such communication during, said time period.

4,195,554

MULTI-CYLINDER DOUBLE-ACTING HOT GAS ENGINE

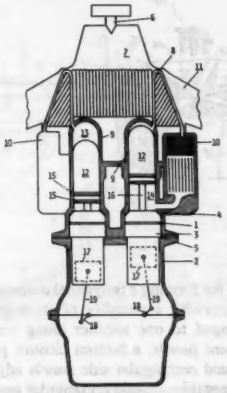
Nils K. G. Rosenqvist, Malmo, Sweden, assignor to Kommanditbolaget United Stirling (Sweden) AB & Co., Malmö, Sweden

Filed Mar. 7, 1978, Ser. No. 884,356

Claims priority, application United Kingdom, Apr. 7, 1977, 14694/77

Int. Cl.[2] **F16J** *11/04;* **F01B** *1/00;* **F16J** *15/18*

U.S. Cl. 92—146 **3 Claims**



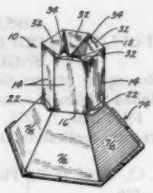
1. A multi-cylinder double-acting hot gas engine of the kind in which the cylinders accommodate respective reciprocating pistons dividing the interior of each cylinder into a variable volume high temperature chamber and a variable volume low temperature chamber, the pistons being secured to respective piston rods extending through and being contacted by seals in seal-holding means, the seals for preventing leakage from the low temperature chambers past the piston rods, the low temperature chambers being defined in part by the seal-holding means, the piston rods being connected to respective crossheads outside the cylinders, the position of each of the crossheads remaining fixed relative to the position of the respective piston and piston rod, the engine comprising two main housing parts which are separably secured to each other by securing means, said seal-holding means being clamped between and housed by said two main housing parts, said seal-holding means including individual seal-holding assembly units, a respective one to each cylinder, said assembly units being of circular periphery greater in diameter than the interior of the respective cylinder, the cylinders being formed as part of one of said two main housing parts so that when the latter are separated the cylinders are separated from the respective pistons, and the pistons, the piston rods, and the seal-holding means remain with, and partially housed by, the other one of the said two main housing parts, and wherein each sealholding assembly unit also includes a guide for a respective one of the crossheads.

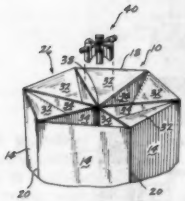
4,195,555

METHOD FOR FOLDING A POLYGONAL CONTAINER

William L. Chase, Des Moines, Iowa, assignor to International Drum Corporation, Des Moines, Iowa

Filed Jun. 13, 1978, Ser. No. 915,014
Int. Cl.[2] B31B *3/74, 1/90*
U.S. Cl. 93—36.8 1 Claim





1. A method for forming a polygonal container from a blank, said blank comprising a plurality of rectangular side panels each being hinged to one another along vertical fold lines between adjacent panels, a bottom closure portion hingedly connected to said rectangular side panels adjacent the lower rectangular edges thereof, said rectangular panels each having upper rectangular edges, said method comprising:

placing said blank over a polygonal cone having the same number of sides as the number of sidewalls in said blank, said blank being inverted during placement over said cone so that said upper edges of said sidewalls engage said sides of said cone and are urged into a predetermined polygonal configuration;

folding said bottom closure portion inwardly about the hinged connection with said lower edges of said rectangular side cartons,

simultaneously folding said bottom closure along preformed folding lines into a configuration comprising a plurality of generally triangular bottom panels equal in number to said side panels and a plurality of interconnecting webs, each web extending between a pair of adjacent bottom panels, each said bottom panel being hingedly connected to one of said side panels, being inclined upwardly from said lower edge of said side panel to which it is connected to as to form an acute angle therewith, having two side edges which abut adjacent side edges of adjacent bottom panels, and having side webs on either side thereof hingedly connecting said bottom panel to an adjacent bottom panel,

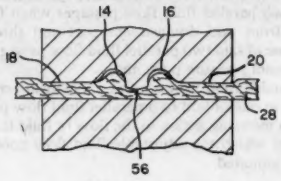
folding each web upon itself in double thickness so that said webs form a plurality of vertically disposed ribs arranged in spoke-like configuration with inner ends located adjacent the center of said spoke-like configuration, fastening said ribs together at the center of said spoke-like configuration with a clip which retentively engages said ribs.

4,195,556

METHOD FOR FORMING A STRIPPABLE BACKING MATERIAL FOR PRESSURE-SENSITIVE ADHESIVE CARRYING SUBSTRATES

Nicholas D. Gallagher, and Richard L. Gibbs, both of Troy, Ohio, assignors to The Brown-Bridge Mills, Inc., Troy, Ohio

Division of Ser. No. 756,786, Jan. 5, 1977, Pat. No. 4,080,878.
This application Nov. 2, 1977, Ser. No. 847,828
Int. Cl.[2] B26D *3/08*
U.S. Cl. 93—58 ST 1 Claim



1. A method of forming a compression scored release liner for use with a face stock carrying a pressure sensitive adhesive, said liner being releasably adherable to an opposite side of said adhesive from said face stock, said method comprising the steps of:

passing said liner through a compression forming area in which said liner is movably supported by a cylindrical roller providing a rigid support surface engaged with one side of said liner;

compressing a continuous narrow elongated region along another side of said liner opposite said one side, sufficiently to reduce the tensile strength of said liner in said region in the range of 50–75% by use of a cylindrical compression scoring member mounted for rotation adjacent said another side and having a cylindrical rib of generally semi-circular cross section transverse to the direction of movement of said liner for causing said compression, said compression rib having a working face with a radius in the range of about 10–30 times the caliper of the liner to be scored;

providing liner relief areas on each side of said compression region for allowing said liner to expand into said relief areas during compression of said region by use of relieved generally semi-circular cross section portions of said compression scoring member on both sides of said rib and of lesser radial extension from the axis of rotation of said scoring member than said rib and the width of said semi-circular cross section relieved portions on both sides of said compression rib being in the range of about 15–50% of the radius of said working face of said rib; and

providing rigid cylindrical guide surfaces on said compression member adjacent said relief areas and extending outwardly therefrom at a predetermined parallel spacing from said rigid support surface provided by said cylindrical roller on said one side of said liner so as to hold said liner between said rigid guide surfaces and said rigid support surface during compression in said region.

4,195,557

CUTTING, SCORING AND EMBOSSING DIE SET

Pierson S. Kang, Lansdale, Pa., assignor to Chem Par Corporation, Montgomeryville, Pa.

Division of Ser. No. 803,336, Jun. 3, 1977, Pat. No. 4,112,827.
This application Jun. 29, 1978, Ser. No. 920,518
Int. Cl.[2] B31B *1/20*
U.S. Cl. 93—59 R 5 Claims

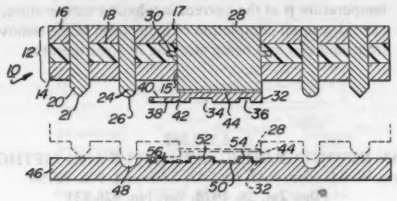
1. A cutting, scoring and embossing die set comprising:

a first die, said first die comprising a base including cutting means, scoring means and first embossing means,

a mating die comprising a base including means for cooper-

ating with said cutting means and said scoring means, and mating embossing means for cooperating with said first embossing means,

registering means on said first embossing means having aperture means therethrough for receiving post means,



post means on said mating die for cooperating with said aperture means to enable proper registration of said first embossing means and said mating embossing means, and

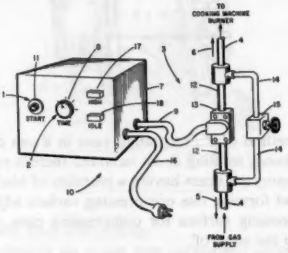
means adapted to facilitate frangible removal of said registering means from said first embossing means along a predetermined portion.

4,195,558

FUEL CONSUMPTION CONTROL SYSTEM FOR COOKING MACHINES

Thomas S. Speakman, 3318 Stoudt's Ferry Bridge Rd., Reading, Pa. 19605

Filed Nov. 14, 1977, Ser. No. 851,278
Int. Cl.[2] A47J *27/62*
U.S. Cl. 99—325 **9 Claims**



1. An apparatus for controlling the consumption of gas by a cooking machine comprising a heated cooking zone, at least one gas burner for suppling heat to the cooking zone, a gas supply conduit for supplying a flow of gas to the gas burner and extending from the gas burner to a customary source of gas and, said apparatus comprising:

means for providing an electrical start signal when a food product enters or is anticipated to enter the cooking zone of the cooking machine;

means for timing a predetermined interval of time and transmitting control signals, connected in electrical circuit with said start signal means and responsive to said start signal, said control signals comprising a first control signal transmitted essentially at the time of receival of said start signal and a second control signal transmitted essentially at the end of said predetermined interval of time and;

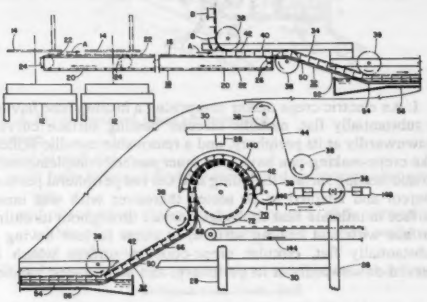
means for adjusting the flow of gas, disposed in series with the gas supply conduit of the cooking machine, connected in electrical circuit with said timing means and responsive to said first control signal by increasing the flow of gas through said gas supply conduit to a first rate of flow and responsive to said second control signal by reducing the flow of gas through said gas supply conduit to a second rate of flow wherein said second rate of flow is lower than said first rate of flow, said adjusting means comprising a first gas conduit with a solenoid valve disposed in series therewith and connected in electrical circuit with said timing means and, a second gas conduit including means restricting the flow of gas disposed essentially in parallel with said first gas conduit and connected at one end in open communication with a first end of said first gas conduit and with the gas supply conduit of the cooking machine in the direction that extends to the source of gas and connected at the outer end in open communication with the second end of said first gas conduit and with said gas supply conduit in the direction that extends to the gas burner of the cooking machine.

4,195,559

APPARATUS AND METHOD FOR THE PREPARATION OF A FOOD PRODUCT

Robert F. Bardsley, Harrington Park, N.J.; Jonas Bortkevicius, Woodhaven, N.Y., and Charles D. Schoonmaker, Boonton, N.J., assignors to General Foods Corporation, White Plains, N.Y.

Filed Jun. 9, 1978, Ser. No. 914,046
Int. Cl.[2] A47J *37/12*
U.S. Cl. 99—353 **30 Claims**



1. An apparatus for the preparation of generally ready-to-consume friable or fragile food product strips having a predetermined configuration, such as a bacon analog or the like, from a semi-processed slab of said food product; comprising:

(a) means for slicing a slab of said semi-processed food product into said strips;

(b) a first conveyor receiving said strips from said slicing means and sequentially transporting said strips towards a discharge end of said conveyor;

(c) guide means for said strips communicating with the discharge end of said first conveyor, said guide means being adapted to have said strips positioned thereon for guiding said strips along a continuing path of movement;

(d) a second conveyor communicating with said first conveyor proximate the discharge end of the latter, said second conveyor having a run extending in closely spaced relationship above said guide means; strip-engaging means on said second conveyor including means contacting said strips proximate the discharge end of said first conveyor and transporting said strips along said guide means intermediate said guide means and said second conveyor run; first forming die means on said strip-engaging means, and means normally biasing said forming die means out of contact with said strips;

(e) a tank containing hot cooking oil, said guide means extending into and along the length of said tank immersed in said hot oil, said strips being conveyed through said tank by said strip-engaging means while submerged in said hot cooking oil so as to be cooked to a desired degree of crispness; and

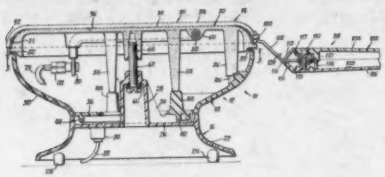
(f) a rotatable forming die wheel for said cooked strips being arranged proximate the discharge end of said tank; a plurality of second forming die means being mounted on the periphery of said forming wheels each adapted to receive respectively one of said cooked strips from said guide means; and means for operatively associating said second die means with a first forming die on said strip-engaging means for conjointly molding said strips into their finished configurations.

4,195,560

ELECTRIC CREPE MAKER

Jean-Pierre DuBois, Lombard, and William L. Lockett, Downers Grove, both of Ill., assignors to Sunbeam Corporation, Chicago, Ill.

Filed Jul. 11, 1977, Ser. No. 814,803
Int. Cl.[2] A47J *37/10*
U.S. Cl. 99—422 **10 Claims**



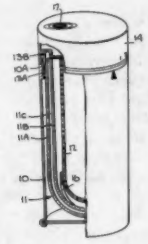
1. An electric crepe maker comprising a heating base having a substantially flat, metallic circular heating surface curved downwardly at its periphery, and a removable metallic skillet-like crepe-making-pan having an inner surface complementary to said heating surface including said curved peripheral portion thereof and adapted to be seated thereover with said inner surface in intimate heat exchange contact throughout its entire surface with said heating surface, an outer surface having a substantially flat, circular crepe-cooking surface which is curved downwardly at its periphery, and an insulated handle.

4,195,561

YOGURT MAKER

George Castanis, 444 6th Ave., New York, N.Y. 10011

Filed Dec. 11, 1978, Ser. No. 968,181
Int. Cl.[2] A23C *9/12*
U.S. Cl. 99—455 **9 Claims**



1. A yogurt maker which requires hot water at a predetermined temperature level and a yogurt milk preparation having bacilli therein to effect incubation when the preparation is mixed with said hot water to produce natural yogurt after a predetermined period, said maker comprising:

(A) a can provided with a thermal insulation liner, said can having a rotatable cover; and

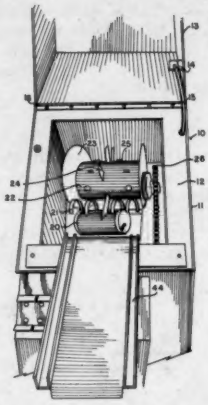
(B) a cartridge receivable within the insulated can and having a removable stopper, said preparation being mixed in said cartridge with said hot water to provide a latent yogurt composition, said cover having a liquid crystal chromatic cell thereon whose surface is exposed to hot water poured over the cover to test said water before it is poured into said cartridge to be sure that its temperature as indicated by the color of the cell is at the desired level, said cell turning a predetermined color only when the temperature is at the correct incubation temperature, said cartridge upon completion of incubation being removable from said can and being storable in a refrigerator.

4,195,562

CAN DISINTEGRATING APPARATUS AND METHOD

Edwin W. Mickler, P.O. Box 43, Zellwood, Fla. 32798

Filed Jul. 28, 1978, Ser. No. 928,834
Int. Cl.[2] B30B *15/08*
U.S. Cl. 100—39 **16 Claims**



13. A method of disintegrating cans in a can disintegrator having a frame, rotating drum mounted thereto rotated by an electric motor, the drum having a plurality of blades mounted thereto, and forming one compressing surface adjacent a second compressing surface for compressing cans, the method comprising the steps of:

feeding the cans down a chute;

cutting said cans received from said chute with a plurality of blades on a rotating drum;

compacting said cut cans between said rotating drum and a stationary surface; and

directing said cut and compacted cans into a receptacle.

4,195,563

SENSOR FOR RECIPROCATING PRESS

Tadas Budraitis, Midlothian, and Gerald W. Seliga, Frankfort, both of Ill., assignors to Productronix, Inc., Oak Forest, Ill.

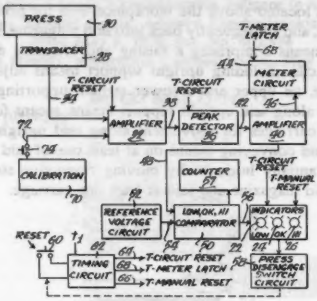
Filed Jun. 30, 1978, Ser. No. 920,714
Int. Cl.[2] G01L *1/16*
U.S. Cl. 100—99 **6 Claims**

1. In a reciprocating press having a piezoelectric transducer providing a voltage proportional to load during a cycle of the machine, an improved circuit for measuring the reverse load on the machine, comprising:

an amplifier connected with said transducer and having an output signal with a peak of one polarity indicating the direct load on the machine and a peak of the opposite polarity indicating the reverse load on the machine;

a circuit connected with the amplifier output for selecting

one portion of the output signal having a polarity corresponding with the load to be measured; and



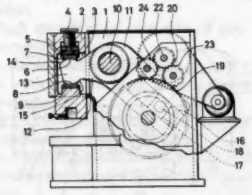
means for detecting and displaying the amplitude of the selected signal portion.

4,195,564

MACHINE PRESS

Hiroyasu Shiokawa, 9-3 Sone-Nishimachi 4-Chome, Toyonaka City, Prefecture of Osaka, Japan

Filed Nov. 13, 1978, Ser. No. 959,780
Claims priority, application Japan, Dec. 10, 1977, 52/148559
Int. Cl.[2] B30B *1/06*
U.S. Cl. 100—231 **3 Claims**



1. A machine press comprising:

a frame including an upper ram supporting portion and a lower workpiece supporting portion;

a ram mounted within said ram supporting portion of said ram for upward and downward movement therein away from and towards said workpiece supporting portion of said frame, said ram having therein a recess;

upper and lower support members extending into said recess, said upper and lower support members having downwardly facing and upwardly facing surfaces which are concave, cylindrical surfaces;

a lever pivotally mounted within said frame, said lever including an upper arm having at a free end thereof a head extending into said recess, said head having upper and lower surfaces respectively contacting said downwardly facing and upwardly facing surfaces of said upper and lower support members and said upper and lower surfaces of said head being convex, cylindrical surfaces, said head being positioned between said upper and lower support members;

means for reciprocably pivoting said lever about a horizontal axis, said means being a wheel rotatably mounted on said frame, a shaft eccentrically mounted on said wheel, said lever further having a lower arm with a slot therein, a slidable member slidably positioned in said slot, said shaft extending into said slidable member, and means for rotating said wheel, whereby eccentric rotation of said shaft will cause said lever to reciprocatingly pivot about said horizontal axis; and

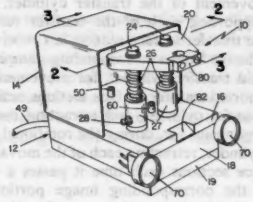
means for adjusting a relative spacing between said upper and lower support members, and for thereby adjusting the degree of pressure exerted by said surfaces of said support members on said surfaces of said head, said means for adjusting including at least one screw threadably engaging and extending through said ram and having an inner end carrying one of said support members.

4,195,565

FLUID-OPERATED PRESS

August V. Cordeiro, East Greenwich, R.I., assignor to Electric Terminal Corporation, Warwick, R.I.

Filed Mar. 16, 1979, Ser. No. 21,000
Int. Cl.[2] B30B *1/38*
U.S. Cl. 100—266 **9 Claims**



1. A fluid-operated press, comprising,

a base,

a piston and rod,

said base having a first cavity shaped to receive said piston,

said piston being shaped and positioned to slide vertically within said cavity while sealed to the vertical walls of said cavity, and

said rod extending upward from said piston and base through an opening in said base, and

a tool holder connected to the upper end of said rod and elevated above said base,

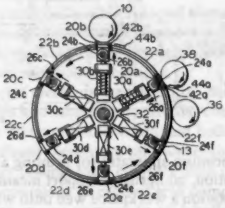
whereby pressurized fluid can be supplied to the upper side of said piston to force said piston downward to thereby pull downward on said tool holder so as to compress a workpiece positioned between said holder and said base.

4,195,566

MULTICOLOR ROTARY PRESS FOR BOTTLES

Kazumi Ozawa, Koga, and Shinichiro No, Koganei, both of Japan, assignors to Kabushiki Kaisha Yakult Honsha, Tokyo, Japan

Filed Mar. 31, 1978, Ser. No. 892,860
Claims priority, application Japan, Mar. 31, 1977, 52-40466[U]
Int. Cl.[2] B41F *17/08*
U.S. Cl. 101—38 R **2 Claims**



1. A multicolor rotary photogravure offset press for printing

an image having divided portions of different colors on the outer surface of a circular cross-section body, comprising: a rotary transfer cylinder having a cylindrical transfer surface consisting of at least one set of a plurality of transfer surface sections, one for each of the different colors of the image portions; means for holding a circular cross-section body in rotational engagement with said transfer surface of the transfer cylinder; means for rotating said rotary transfer cylinder for moving said transfer surface sections past said body for transferring image portions on said transfer surface sections to said body; a plurality of stamping photogravure rolls disposed in rotational engagement with said transfer surface of the transfer cylinder for transferring respective image portions corresponding to the divided image portions which have previously been placed thereon to said transfer surface sections, said stamping rolls corresponding to respective transfer surface sections in each set for transferring the image portion thereon to the corresponding transfer surface section when said transfer surface section is opposed to the stamping roll during the rotational movement of the transfer cylinder; a supporting means for supporting each of the transfer surface sections, other than the transfer surface section last receiving an image portion of an image from a corresponding stamping roll during rotation of said transfer cylinder, for movement of said thus movably supported transfer surface sections radially inwardly within the transfer cylinder; and retracting means engaging said supporting means for, during the rotational movement of the transfer cylinder, retracting each of the movably supported transfer surface sections each time it passes a stamping roll after having the corresponding image portion transferred thereto; whereby image portions transferred onto transfer surface sections other than the transfer surface section last receiving an image portion from a stamping roll are not contacted by stamping rolls positioned between the stamping roll from which an image portion is received and the position of the body to be printed.

4,195,567

STENCIL PRINTING APPARATUS

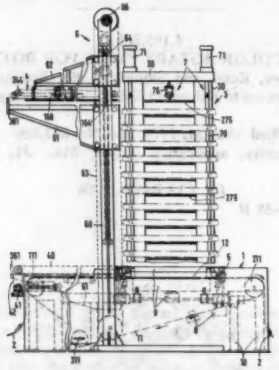
Mathias Mitter, Falkenstrasse 57, 4815 Schloss Holte, Fed. Rep. of Germany

Filed Sep. 26, 1977, Ser. No. 836,477

Claims priority, application Fed. Rep. of Germany, Sep. 25, 1976, 2643226

Int. Cl.[2] B41F *15/10, 15/24, 15/36, 15/42*

U.S. Cl. 101—115 **11 Claims**



1. Stencil printing apparatus for printing a workpiece web at a printing station, comprising support means for supporting at the printing station a workpiece web onto which a pattern is to be printed in a plurality of successive printing operations; a magazine adjacent said support means at the printing station; a plurality of flat-screen stencils in said magazine and each provided with at least part of the pattern to be printed; and transferring means for successively transferring the respective stencils from said magazine to a printing position in which the stencil is located above the workpiece web for printing onto the same, and subsequently back into said magazine, said transferring means comprising a raising and lowering device for said stencils, including upright support means adjacent said magazine, an upper and a lower stencil-supporting carriage movable along said upright support means, means for mounting said carriages for movement along said upright support means, and conveying means on at least one of said carriages for substantially horizontally moving respective stencils between said magazine and said at least one carriage.

4,195,568

BEARER RING - PRINTING PRESS CYLINDER ALIGNMENT AND CONNECTION CONSTRUCTION FOR ROTARY PRINTING MACHINES

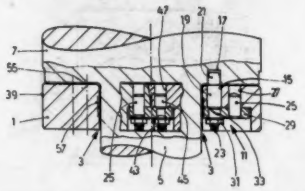
Hermann Fischer, Augsburg, Fed. Rep. of Germany, assignor to Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft (M.A.N.), Augsburg, Fed. Rep. of Germany

Filed Nov. 20, 1978, Ser. No. 962,395

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1977, 2753284

Int. Cl.[2] B41F *5/00;* **F16C** *23/00*

U.S. Cl. 101—216 **8 Claims**



1. In a rotary printing press

a bearer ring (1)—printing press cylinder (7) connection construction, in which the bearer ring (1) is mounted on a shaft (5) of the cylinder, positioned against an end face of the cylinder, the shaft passing through the bearer ring, and having an elastic, shock-absorbent, wear-resistant layer (3) interposed between the shaft (5) and the bearer ring,

and comprising, in accordance with the invention,

at least three connection pins (9) having a first shaft portion (19) and a second shaft portion (21), the second shaft portion being eccentric with respect to the first shaft portion;

at least three first bores (15) formed in the end face of the bearer ring (1) and extending therethrough essentially parallel to the axis of the shaft;

and at least three second bores (17) essentially matching, and in alignment with, the first bores and extending inwardly of the printing press cylinder (7) from the end face thereof against which the bearer ring is positioned,

the pins (9) extending through said bores, the first shaft portion (19) of the pins being positioned in said first bores of the bearer ring and the second shaft portion in the second bores of the cylinders, to permit relative adjustment of the position of the bearer ring with respect to the cylinder upon rotation of said pins.

4,195,569

DEVICE FOR THE CIRCUMFERENTIAL ADJUSTMENT OF A FORM CYLINDER

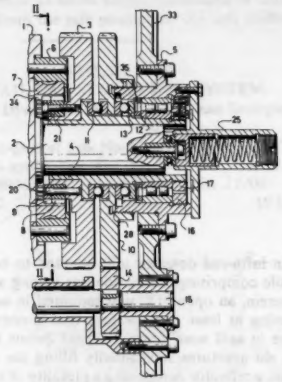
Zbynek Liska, Adamov, Czechoslovakia, assignor to Adamovske strojirny, narodni podnik, Adamov, Czechoslovakia

Filed May 8, 1978, Ser. No. 903,574

Claims priority, application Czechoslovakia, May 16, 1977, 3173/77

Int. Cl.[2] B41F *13/14*

U.S. Cl. 101—248 4 Claims



1. A device for circumferential adjustment of a form cylinder of a printing machine, for the purpose of obtaining proper registration of an image to be printed, comprising:

a form cylinder;

a cylinder shaft mounted on one side of said cylinder and rotatably coupled thereto;

an axially shiftable bushing mounted on said cylinder shaft;

a drive gear with oblique teeth affixed to one end of said shiftable bushing;

an externally toothed interconnecting gear coaxial with and rigidly connected to said drive gear;

an externally toothed backlash eliminating gear rigidly connected to said interconnecting gear, said gears being mutually coaxial;

a toothed ring coaxial with and having an inner toothed surface in axially shiftable engagement with the teeth of said interconnecting and backlash eliminating gears;

a sleeve affixed to a front side of said form cylinder, said toothed ring being disposed within said sleeve;

a fourth gear rotationally mounted coaxial with said drive, interconnecting and backlash eliminating gears;

two axial bearings mounted on said shiftable bushing for supporting said fourth gear, one of said bearings axially abutting a shoulder of said bushing to urge said bushing in the axial direction toward said form cylinder;

a flange affixed to a side wall of the printing machine, said fourth gear being threadably engaged with said flange for axial movement with respect thereto.

4,195,570

NON-MISTING INKING ROLL, METHOD OF MAKING SAME, AND INK FOR USE THEREWITH

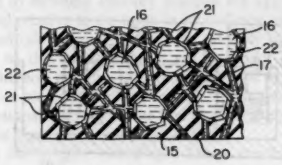
Doyle V. Haren, Clyde, N.C., assignor to Dayco Corporation, Dayton, Ohio

Filed May 26, 1976, Ser. No. 690,334

Int. Cl.[2] B41F *1/46;* B29D *27/00*

U.S. Cl. 101—348 13 Claims

1. A substantially non-misting inking roll comprising, cylindrical support means, a microporous cylindrical member supported by said support means, said member being defined by an elastomeric material having a plurality of ink-receiving cavities dispersed throughout and integral passages interconnecting said cavities, said member having an outer ink-applying surface, an ink formulation disposed in said cavities and passages, said ink formulation comprising a printing ink having a thickening substance in the form of a plastisol dispersed therethrough to define a modified ink formulation, said thickening substance ranging between 5 parts to 20 parts by weight of said ink formulation, and a solidified coating of some of said thickening substance on the outer ones of said cavities and passages, said coating being thermally responsive and said coating on said outer passages serving as an automatic flow restrictor controlling flow of said ink formulation from said ink-applying surface by reducing flow area of said passages in direct proportion to an increase in temperature and thereby substantially eliminating misting of said roll due to temperature.



4,195,571

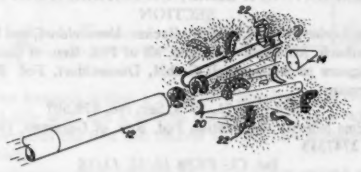
MODULAR WHEEL DISPENSER

Charles W. Beeker, and William J. Pribyl, Jr., both of Baltimore, Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 2, 1979, Ser. No. 26,374

Int. Cl.[2] F42B *13/56*

U.S. Cl. 102—89 CD 5 Claims



1. A dispensing system for electronic countermeasure against enemy aiming devices, said system comprising:

an elongate hollow housing,

a plurality of substantially wheel-shaped elements each having at least two compartments formed therein, said wheel-shaped elements being resiliently deformed and coaxially aligned within said hollow housing,

said wheel-shaped elements are resiliently deformable from elongate strips into substantially circular condition and are restrained in said condition within said hollow housing so that, upon release therefrom, said wheel-shaped elements spontaneously resume their elongate strip configuration.

chaff material contained in each of said compartments, and

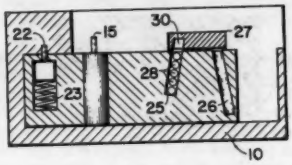
forcible ejection means secured to said hollow housing so that actuation of said ejection means applies force to eject said wheel-shaped elements out of said hollow housing.

4,195,572

PRESSURIZED PROJECTILE FOR DELIVERING AND DISPENSING LIQUIDS OR PARTICULATES

John S. Knapp, Pittsburgh, Pa., assignor to Federal Laboratories, Inc., Saltsburg, Pa.

Filed May 2, 1978, Ser. No. 902,180
Int. Cl.[2] F42B 13/46
U.S. Cl. 102—90 4 Claims



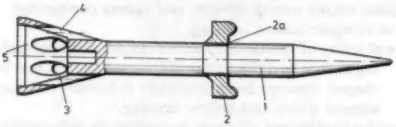
1. A projectile for delivering and dispersing material under pressure comprising a hollow housing in the form of a cylindrical shell, closed at its rear by an end wall and reduced in diameter at its forward end, a sealed container to receive the material under pressure slidably received for a portion of its length within the reduced diameter portion of the shell, a piercing pin secured to the end wall within the housing rearwardly of the container, and disposed in the path of the container as it slides within the housing, an elongated launching tube secured at one end of the wall and extending rearwardly and axially of the housing, means to prevent the piercing pin from entering the container prior to projectile launching, and exit ports in the housing to permit the material under pressure to escape from the housing after the projectile has been launched and the piercing pin has penetrated the container.

4,195,573

SUB-CALIBER PROJECTILE OF ARROW-SHAPED FORM HAVING A RESISTANCE-STABILIZING TAIL SECTION

Jürgen Leeker, Neuss; Hanjörg Becker, Duesseldorf, and Rudolf Rombach, Monchen-Gladbach, all of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Duesseldorf, Fed. Rep. of Germany

Filed Feb. 21, 1978, Ser. No. 879,507
Claims priority, application Fed. Rep. of Germany, Oct. 21, 1977, 2747313
Int. Cl.[2] F42B 13/32, 13/16
U.S. Cl. 102—92.7 8 Claims



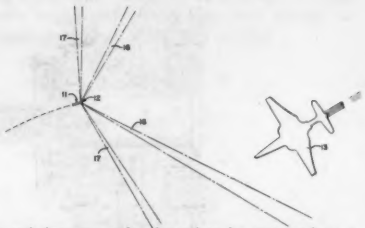
1. An improved sub-caliber projectile having a columnar main body and a resistance-stabilizing tail section operatively connected thereto of larger outside diameter than the diameter of the main body, said projectile being of limited range, wherein said tail section includes at least two bores for the passage of air therethrough for decreasing the resistance with increasing supersonic velocity during flight of the projectile and is rigidly secured to said projectile.

4,195,574

OPTICAL FUZE

Stephen M. MacNeille, Thompson, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 1, 1961, Ser. No. 136,983
Int. Cl.[2] F42B 5/08; F42C 13/00
U.S. Cl. 102—213 7 Claims



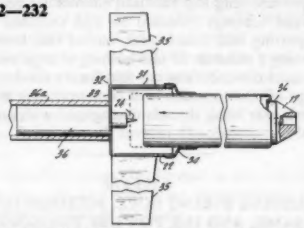
1. An infra-red detector unit adapted to be mounted on a projectile comprising a nose adaptor having at least one aperture therein, an open "O" unit mounted in said nose adaptor and having at least one aperture that is correlated with the aperture in said nose adaptor, insert means having first and second slit apertures substantially filling the aperture in said "O" unit, a reflector comprising a plurality of strips mounted in said "O" unit and having a parabolic curved surface with a first and second focal point for reflecting infra-red rays from a target source as they pass through said first and second slit apertures, first and second infra-red detecting cells mounted at the first and second focal points of said reflector, said infra-red rays passing through said first and second slit apertures and reflected by said reflector onto said first and second detecting cells thereby providing a first channel for said first infra-red detecting cell and a second channel for said second infra-red detecting cell whereby when the infra-red rays pass through the first and second channels in rapid succession during the flight of the projectile a detonating signal is generated.

4,195,575

MECHANICAL TIME DELAY SAFETY AND ARMING MECHANISM

Daniel A. Deuker, Mesa, and Paul A. Hartwell, Chandler, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation-in-part of Ser. No. 838,522, Oct. 3, 1977, abandoned. This application Mar. 5, 1979, Ser. No. 17,627
Int. Cl.[2] F42C 9/06, 15/22
U.S. Cl. 102—232 8 Claims



1. A mechanical time delay safety and arming mechanism for fuzes on spinning explosive projectiles and the like comprising:
(a) a base member adapted to be affixed to the projectile;
(b) a sliding member slideably mounted on said base member for generally radial outward movement from a safe position to an arm position in response to the spinning of the projectile;
(c) detonator means mounted so as to be properly positioned for detonation of the projectile only when said sliding member is in the arm position; and

(d) center of gravity shifting means positioned on said sliding member for maintaining the center of gravity of said sliding member at a first location for a predetermined period of time subsequent to the start of spinning of the projectile to prevent sliding movement of said sliding member in response to spinning of the projectile, said center of gravity shifting means operating in response to spinning of the projectile to shift the center of gravity of said sliding member in the predetermined period of time to a second location to allow sliding movement of said sliding member from the safe position to the arm position.

4,195,576

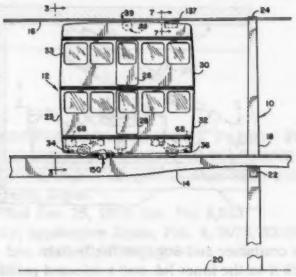
MONORAIL CAR STABILIZING SYSTEM

Jack E. Gutridge, Dyer, Ind., assignor to Pullman Incorporated, Chicago, Ill.

Continuation-in-part of Ser. No. 670,603, Mar. 26, 1976, abandoned. This application Apr. 12, 1979, Ser. No. 29,221

Int. Cl.[2] **B61B** *3/02, 13/04;* **B61C** *3/00, 13/04*

U.S. Cl. 105—147 **18 Claims**



1. A rail vehicle operable between a lower tractive rail and an upper stabilizing rail of a rail system comprising;

a vehicle body;

wheel means supporting the body for rotatable movement on the lower tractive rail;

an upper stabilizing wheel on said body and being vertically positioned for rotatable contact with the upper stabilizing rail; and

means movably laterally positioning the upper stabilizing wheel relative to said body whereby the body may be laterally shifted relative to the upper rail and thereby vertically align the body with the resultant of centrifugal and gravitational forces acting thereon during movement along the rail system.

8. A rail vehicle operable between a lower tractive rail and an upper stabilizing rail of a rail system comprising:

a vehicle body

wheel means supporting the body for rotatable movement on the lower tractive rail;

an upper stabilizing wheel on said body and being movably positioned for rotatable contact with the upper stabilizing rail; and

means movably vertically positioning said upper stabilizing wheel relative to said wheel means supporting the body for varying frictional engagement between the wheel means supporting said body and the lower tractive rail in accordance with traction requirements along the rail system.

10. For use in an elevated electric rail system including a lower tractive rail and an upper stabilizing rail having a plurality of electric contacts carried thereby, an electrically powered rail vehicle comprising:

a vehicle body having a chassis;

a plurality of running gear assemblies supporting the body by its chasis for movement along the lower tractive rail;

an upper stabilizing wheel supported on the body for rotatable contact with the upper stabilizing rail;

an electrical pickup assembly carried by said body including a plurality of electrical pickup contacts matable with the electrical contacts on the upper stabilizing rail;

an emergency brake assembly attached to the body and operable to clamp the lower tractive rail during braking; and

a lateral control servomechanism including a carrier means operable to movably laterally position the upper stabilizing wheel relative to the body in accordance with vehicle speed and rail curvature to thereby laterally tilt the body relative to the lower tractive rail to direct centrifugal forces thereon downwardly relative to the body during movement along the rail system and to maintain an effective relationship between the body and brake assembly.

15. A rapid transit system comprising:

a vertical rail system including a lower tractive rail and shroud means;

said shroud means including an upper stabilizing rail parallel to said lower tractive rail, electrical contact means adjacent to said upper rail; and a hood encompassing the upper rail and electrical contact means in supporting and weather protective relation,

a rail vehicle disposed between said lower and upper rails including a vehicle body and wheel means having a plurality of lower wheels rollable on the lower rail and an upper stabilizing wheel rollable along the upper rail;

means for driving the vehicle including an electric motor energized through the electrical contact means; and

means for moving the upper wheel relative to the vehicle body and wheel means to compensate for conditions encountered during movement of the rail vehicle.

4,195,577

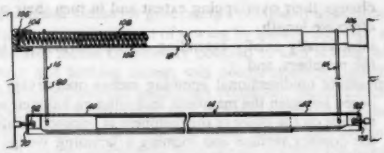
PORTABLE HANGING SHELF

Leo H. Gross, 546 NE. 73rd St., Miami, Fla. 33138

Filed Oct. 10, 1978, Ser. No. 949,901

Int. Cl.[2] **A47B** *41/04*

U.S. Cl. 108—31 **7 Claims**



1. For hanging within a window frame having a first and second side wall and a bottom sill and including a window pane between the first and second side walls, a portable shelf comprising:

an adjustable shelf comprising a first and a second mating longitudinally extendible portions and mutually interconnecting guide means on the portions including stop means to limit longitudinal movement of the portions toward one another, the shelf being adjustable to fit between the window frame side walls, adjacent the window pane,

adjustable support rod means for the shelf having a first and second end, the rod comprising a first and a second telescoping tubular member and spring means captivated between the ends of the rod and normally urging the rod portions away from each other to thrust the first and second rod ends into engagement with the first and second window frame side walls to create a normal force on the side walls and consequent frictional force able to withstand a gravitational load in excess of the weight of the portable shelf, and

shelf hanging means to suspend the shelf in hanging relation to the rod comprising hangers bent at an offset such that one leg is parallel to the window pane while the other leg

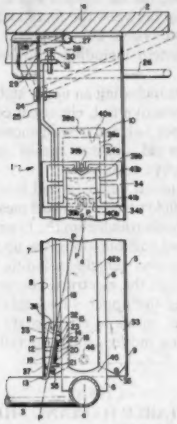
is at an angle to the parallel leg and diverging from it thereby the center of gravity of the shelf is moved forward such that the shelf remains parallel with the bottom sill.

4,195,578

EXTENSIBLE SUPPORT ASSEMBLY FOR OVERBED TABLE

Roland A. Benoit, and Edmund P. Guillot, both of Danielson, Conn., assignors to Interroyal Corporation, New York, N.Y.

Filed Aug. 14, 1978, Ser. No. 933,239
Int. Cl.[2] A47B 9/00; F16M 11/24
U.S. Cl. 108—144 **25 Claims**



1. Extensible support assembly adapted to be incorporated in a table assembly or the like, comprising

a pair of cooperating axially overlapping support members arranged for relative axial movement therebetween to change their overlapping extent and in turn their overall effective length,

a substantially axially extending contact surface on one of the members, and

releasable unidirectional jamming means operatively interposed between the members, including an inclined wedge surface on the other of the members in opposed relation to the contact surface and forming a jamming wedge zone with the contact surface, a movable jamming element disposed operatively in the jamming wedge zone, and a movable release element disposed operatively adjacent to the jamming element,

the jamming element being movable independently of the wedge surface, contact surface and release element, and being normally resiliently directly biased independently of the release element into unidirectional jamming engagement in direct contact between the wedge surface and the contact surface for jamming the members against further corresponding relative movement therebetween, and

the release element being movable for releasably urging the jamming element out of such unilateral jamming engagement to permit further corresponding relative movement between the members.

4,195,579

PORTABLE SAFE

John S. Doyel, New York, N.Y.

Filed Dec. 11, 1978, Ser. No. 968,562
Int. Cl.[2] E05G 1/026
U.S. Cl. 109—52 **5 Claims**

1. A portable safe which when locked wedges itself in a drawer to resist being either opened or removed from the drawer without first being unlocked, comprising:

an open-top container which has a bottom, side walls, a front wall and a back wall which define an interior for storing valuables,

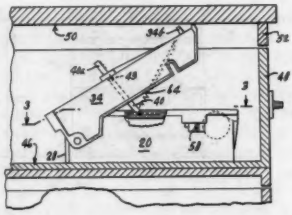
an inner lid which fits over the container to enclose its interior and bar access to it,

a substantially rigid outer lid which fits over the container and the inner lid and has a back end pivoted on the container so that it can be pivoted up or down relative to the container to thereby increase or decrease the vertical dimension of the safe,

a substantially rigid prop which is pivoted on and extends through the outer lid such that its top end is above the outer lid and its bottom end is below it,

said inner lid having means for engaging the bottom end of the prop during movement thereof relative to the inner lid,

a locking plate coupled with the inner lid and movable relative thereto between a locking position in which it concurrently engages the container to lock the inner lid to



the container and engages the bottom end of the prop to lock it to the inner lid, and a released position in which it does not engage the container and does not lock the prop to the inner lid, whereby when the locking plate is in its released position the outer lid may be manually pivoted up to wedge the safe in a drawer or down to unwedge the safe and the inner lid may be manually lifted completely away from the container, and when the locking plate is in its locking position the inner lid keeps the container closed and, if the outer lid is wedged in a drawer, the prop keeps it from being unwedged,

a lock coupled with the locking plate and having a locked position, to which it can be moved only when the locking plate is in its locking position and in which it keeps the locking plate from moving from its locking to its released position, said lock additionally having an unlocked position in which it does not keep the locking plate from moving between its positions, and

slide pushers coupled to the locking plate and accessible from outside the safe to be manually moved, when the lock is in its unlocked position, to thereby move the locking plate between its locking and released position.

4,195,580

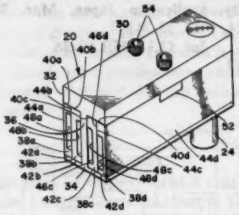
MOUNTING BLOCK FOR TUFTING MACHINE GAUGE PARTS

Kenneth Hurst, 1804 Tombras Ave., Chattanooga, Tenn. 37412

Filed Dec. 15, 1978, Ser. No. 969,856
Int. Cl.[2] D05C 15/00
U.S. Cl. 112—79 R **9 Claims**

1. A mounting block for a tufting machine for carrying a plurality of gauge parts each having an elongated mounting portion of substantially rectangular cross section, said block comprising a unitary body member having a pair of elongated substantially parallel spaced flanges, a plurality of elongated retaining plates having a pair of elongated surfaces spaced apart by a distance substantially equal to the spacing between said flanges, and elongated front and rear faces joining said

surfaces, an elongated rectangular groove formed in each of the rear faces, the cross section of each groove corresponding to that of the mounting portion of said gauge parts, each of said retaining plates being disposed in seriatim intermediate and



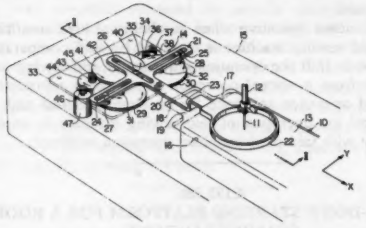
abutting said flanges, the front face of the plates abutting the rear face of the adjacent plate to define a plurality of enclosed elongated rectangular channels for receiving said gauge parts, and means for securing said gauge parts in respective channels.

4,195,581

MECHANISM FOR MOVING WORK FABRIC FOR EMBROIDERING BY A SEWING MACHINE

Naoki Ohara, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariyashi, Japan

Filed Jan. 25, 1979, Ser. No. 6,883
Claims priority, application Japan, Feb. 1, 1978, 53-10690
Int. Cl.[2] D05C *9/04*
U.S. Cl. 112—103 **7 Claims**



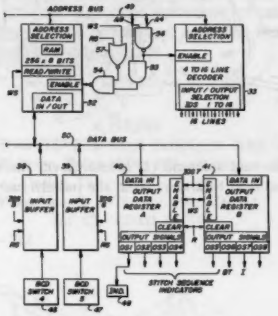
1. A mechanism adapted for holding and moving a work fabric to be embroidered by a sewing machine, including a pair of first crank and slotted cross-head mechanisms, each of said first crank and slotted cross-head mechanisms comprising a crank and a slot in a common cross-head, said crank of each of said first crank and slotted cross-head mechanisms being a sliding fit respectively in said slot of each of said first crank and cross-head mechanisms, said cranks being apart from revolution axes thereof at an identical distance from the axes respectively, said slots of said first crank and slotted cross-head mechanisms being in parallel with each other, a second crank and slotted cross-head mechanism, said second crank and slotted cross-head mechanism comprising a crank and a slot in said common cross-head, said crank of said second crank and slotted cross-head mechanism having a sliding fit in said slot thereof, said slot of said second crank and slotted cross-head mechanism being at right angle to said slots of said first crank and slotted cross-head mechanisms, a frame adapted for holding said work fabric in tensioned condition and being rigidly connected to said common cross-head, and means for attaching said mechanism contiguously to a bed of the sewing machine.

4,195,582

SEWING MACHINE STITCHING CONTROL SYSTEM

Sheldon Novick, Flying Hills, and Carl M. Wenrich, Shillington, both of Pa., assignors to Teledyne Mid-America Corporation, Los Angeles, Calif.

Filed Sep. 14, 1978, Ser. No. 942,369
Int. Cl.[2] D05B *19/00*
U.S. Cl. 112—121.11 **17 Claims**



1. A sewing machine stitching control apparatus for use in conjunction with a sewing machine having a sewing head, means for forwardly and reversely stitching and for braking to a stop the needle of the sewing head, and means for signalling the needle position, said control apparatus comprising in combination,

(a) selectively operable first means for generating a first stitch signal corresponding to forward or reverse stitching,

(b) second means for generating a second stitch signal corresponding to a desired number of stitches to be made by the sewing machine,

(c) storage means operatively couplable to said first and second means for storing said first and second stitch signals,

(d) command means for generating a command signal directing the commencement of sewing by the sewing head, and

(e) control means operatively coupled to said sewing head drive and braking means, said needle position signalling means, said storage means and command means effective responsive to receipt of said command signal to examine said stored first and second stitch signals and automatically actuate said sewing head needle to stitch the number of stitches designated by said second stitch signal in the forward or reverse direction as designated by said first stitch signal, and to automatically stop said sewing head needle when the last of the designated number of stitches has been completed.

4,195,583

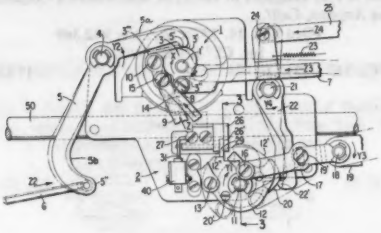
RELEASING MECHANISM FOR CAM FOLLOWERS IN A ZIGZAG SEWING MACHINE

Setsuo Matsumoto, Utsunomiya, Japan, assignor to The Singer Company, New York, N.Y.

Filed Apr. 24, 1978, Ser. No. 899,444
Int. Cl.[2] D05B *3/02*
U.S. Cl. 112—158 A **8 Claims**

1. In a zig zag sewing machine having a plurality of pattern cams designed to produce stitch patterns by selecting one of said pattern cams with a cam follower which moves responsive to both turning depression of a pattern selector dial, a releasing mechanism comprising an electro-magnetic rotary solenoid (1), said electro-magnetic solenoid (1) being arranged to be capable of being energized from outside power source by the depression of such pattern selector dial, and a means to activate

a link (7) connected to a cam follower and also a feed releasing lever (17) connected to a feed follower mechanism concur-



rently when said solenoid (1) is energized, thereby releasing the cam and feed followers from the pattern cams.

4,195,584

TUFTING NEEDLE

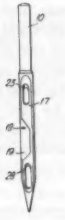
Curt L. Falk, Rullstensvägen 20, S-360 50 Lessebo, and Arne E. Johansson, Turevägen 17, S-360 60 Vissefjärda, both of Sweden

Filed Mar. 9, 1978, Ser. No. 884,965

Claims priority, application United Kingdom, Mar. 9, 1977, 9936/77

Int. Cl.[2] D05B *85/00*

U.S. Cl. 112—222 **5 Claims**



1. In a tufting machine needle having a shank with an elongated blade depending from the shank and terminating in a tip, the improvement wherein said blade has a pair of eyes, an upper one of said eyes being located adjacent said shank and the other lower one of said eyes being located adjacent said tip, both of said eyes extending through said blade from one side thereof to the other, said one side of said blade having an elongated yarn guide groove extending laterally of said eyes from substantially said tip to said shank, said other side of said blade having a looper recess disposed between said eyes, said eyes being spaced apart vertically a substantial distance, so that when the needle is mounted in a tufting machine and backing fabric is presented to the needle, the upper eye adjacent the shank does not penetrate the backing fabric when the needle is in its lowermost position.

4,195,585

PROTECTION APPARATUS FOR ELECTRIC SEWING MECHINE

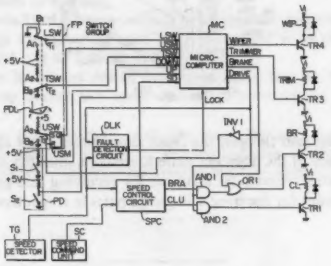
Tadashi Takahashi, and Shigeki Morinaga, both of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

Filed Mar. 28, 1978, Ser. No. 891,034

Claims priority, application Japan, Mar. 30, 1977, 52-37950[U]; Jun. 24, 1977, 52-74387

Int. Cl.[2] D05B *69/36*

U.S. Cl. 112—277 **7 Claims**



1. A protection apparatus for an electric sewing machine comprising:

drive means for driving said sewing machine by a motor;

a speed detector for detecting an actual rotational speed of a shaft of said sewing machine;

a speed command unit for issuing a speed command to drive said shaft of said sewing machine at a predetermined rotational speed;

comparator means for comparing an output of said speed detector with said speed command of said speed command unit to determine from the comparison result whether the load condition of said sewing machine is normal or abnormal; and

control means operative when an abnormal load condition of said sewing machine is detected by said comparator means to shift the operation sequence of said sewing machine from a normal operation sequence to a predetermined operation sequence for an abnormal load and to control the operation of said sewing machine in accordance with said predetermined operation sequence.

4,195,586

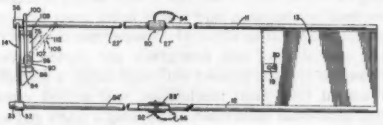
KNOCK-DOWN STARTING PLATFORM FOR A ROOF SEAMING MACHINE

James W. Martin, Kansas City, and John R. Hardwick, Gower, both of Mo., assignors to Butler Manufacturing Company, Kansas City, Mo.

Continuation-in-part of Ser. No. 794,150, May 5, 1977, Pat. No. 4,102,285. This application Jan. 23, 1978, Ser. No. 871,472

Int. Cl.[2] B21D *39/00*

U.S. Cl. 113—54 R **10 Claims**



1. A kit for a knock-down starting platform for a roof seaming machine, comprises: a machine support platform, a pair of elongate side frame members connected at one end to the support platform, and a bridge member on the other end of the side frame members spanning the distance therebetween, said side frame members each comprising releasably joined together sections which may be disassembled for ease in storage,

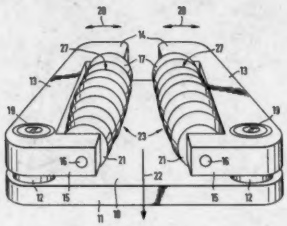
handling and shipping, and a latching mechanism attached to said bridge member for releasably and securely locking said bridge member to a standing seam of a roof, said latching member including abutting means locatable on one side of a roof seam and a movable cam locatable on another side of a seam opposite to the abutting means and operating means connected to said cam moving said cam between a first position for jamming said cam against the roof seam another side and a second position for spacing said cam from the roof seam another side, said cam being positionable to force the roof seam into abutting contact with said abutting means when said cam is in said first position.

4,195,587

SHEET CLEAT HAVING MOVABLE GRIPPING JAWS

Gunter M. Voss, Steingrabenstr. 28, D-8036 Herrsching-Breitbrunn, and Herbert Schneider, Tutzing, both of Fed. Rep. of Germany, assignors to Gunter M. Voss, Herrsching-Breitbrunn, Fed. Rep. of Germany

Filed Jul. 24, 1978, Ser. No. 927,316
Int. Cl.² B63B *21/04*
U.S. Cl. 114—218 **16 Claims**



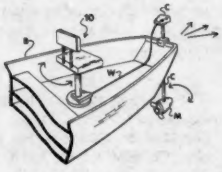
1. In a sheet cleat having a bearing surface and two confronting jaws pivotably mounted for angular displacement in a plane parallel to the bearing surface towards and away from each other and spring biased towards each other and having teeth for gripping a sheet, the improvement wherein the teeth of each jaw comprise at least one roller mounted for free rotation on its corresponding jaw and movable therewith, each roller having the axis of rotation thereof disposed in a plane parallel to the bearing surface and having a surface provided with a profile forming the teeth.

4,195,588

REMOTE STEERING CONTROL FOR ELECTRIC OUTBOARD MOTORS

Donald E. Hudson, Rte. 15, Box 164, Lexington, N.C. 27292

Filed Jul. 17, 1978, Ser. No. 925,478
Int. Cl.² B63H *5/13, 21/26*
U.S. Cl. 115—18 E **4 Claims**



1. Remote steering control for electric outboard motors of the type wherein the outboard motor casing includes a rotatable steering shaft extending upwardly therefrom which is caused to rotate responsive to longitudinal movement of a Bowden wire or the like, said steering control comprising:

(a) a seat pedestal including a support shaft having a seat mounting bracket supported on the upper end thereof;

(b) an actuating arm secured to said support shaft and extending horizontally therefrom, the free end of said arm receiving and securing one end of said Bowden wire so that said Bowden wire is moved longitudinally responsive to rotation of said support shaft;

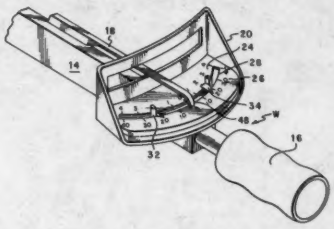
(c) slip clutch means connecting said seat mounting bracket to the upper end of said pedestal support shaft for allowing both selected rotational movement of said support shaft and positioning of said seat mounting bracket independently of said support shaft.

4,195,589

INDICATING DEVICE FOR TORQUE WRENCHES

Raymond J. Blattner, Palos Hills, Ill., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Nov. 2, 1978, Ser. No. 956,831
Int. Cl.² G01D *13/24*
U.S. Cl. 116—212 **6 Claims**



1. An improved indicating device for torque wrenches or the like that include a lever having a handle at one end and a work engaging member at the other end and a pointer that moves in response to the application of torque to a threaded fastener or the like, the improvement comprising:

scale means mounted on the lever near the handle, said scale means including an upper surface and having an arcuate groove arranged to be traversed by the pointer, said groove having a relatively narrow arcuate slot portion opening through the upper surface of said scale means; and,

a unitary indicator member constructed from resilient material, said indicator member including an upstanding portion engageable with the pointer for moving said indicator member along said groove, an indicating portion disposed outside said groove adjacent said surface, a narrow connecting portion extending through said slot portion and a friction portion having angularly disposed end portions that are wider than said slot portion and groove in an unstressed condition, and said friction portion being deformable to pass through said slot portion into said groove to frictionally engage said scale means in said groove.

4,195,590

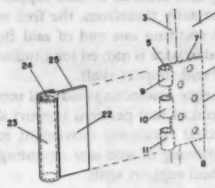
DOOR CASING HARDWARE PAINT SHIELD

Billie M. Herrington, 4636 Valley Garden SW., Albuquerque, N. Mex. 87105

Filed May 12, 1978, Ser. No. 905,512
Int. Cl.² B05C *11/16*; B05B *15/04*; B05C *5/00*
U.S. Cl. 118—505 **4 Claims**

1. A set of reuseable paint covers for all the installed hardware in door jambs to permit complete painting of the door jamb and nearly walls, in one operation, said set of pain covers protecting the installed hardware from paint and paint splat-

ters; said set of paint covers comprising a paint cover for a hinge butt plate member, a paint cover for a striker plate, a



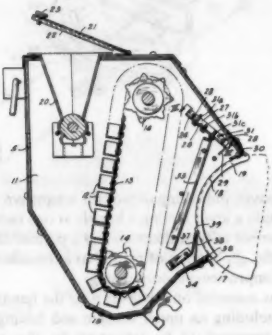
paint cover for the door members of a hinge; said set of paint covers being made of rigid yet slightly flexible material.

4,195,591

CASCADE ASSEMBLY AND METHOD

Kenneth R. Reick, Oak Brook; William M. Blumthal, Naperville, and Harold S. Hurwitz, Downers Grove, all of Ill., assignors to Yorktown Industries, Inc., Addison, Ill.

Filed Dec. 30, 1977, Ser. No. 865,889
Int. Cl.[2] G03G *13/08*
U.S. Cl. 118—655 **17 Claims**



1. A cascade assembly for xerographic apparatus, comprising:

a housing providing a cascade chamber having therein an endless series of buckets and means for driving the buckets to scoop developer comprising fusible powdered toner carried electrostatically on particulate transfer medium from a sump area to an elevated position where the buckets spill the developer generally toward a perimeter sector of a horizontal axis rotary drum carrying an electrostatic image charge and projecting through a window into the chamber;

a generally upwardly facing cascade baffle elongated substantially parallel to the drum axis and said baffle having its upper edge adjacent to said elevated position to receive said developer spilled from said buckets and having a lower edge adjacent to but spaced from the top of said perimeter sector of said drum, and adapted for guiding the developer spilled from the buckets toward and onto the top of said perimeter sector to cascade thereon and effect transfer of said toner from said transfer medium to said image charge;

and distribution means comprising upward projections on said upper face of said baffle for effecting substantially uniform distribution of the developer as the developer moves down said baffle upper face toward said perimeter sector so as to attain substantially uniform cascading of the developer from the baffle onto said perimeter sector and thereby substantially uniform cascading of the developer along said perimeter sector and substantially uniform transfer of toner to said image charge from said transfer medium in the cascading developer;

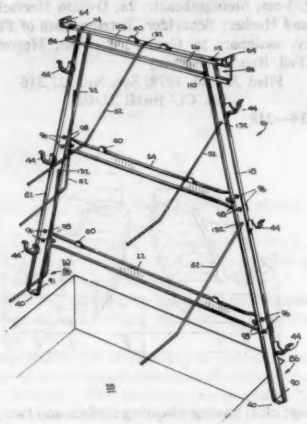
said upward projections comprising a plurality of rows of the projections in which the projections are spaced apart in the rows and the projections in each row are staggered with respect to the projections in an adjacent row.

4,195,592

POULTRY CAGE SYSTEM

Anthony J. Siciliano, South Lyon, Mich., assignor to Diamond International Corporation, New York, N.Y.

Filed Jan. 25, 1978, Ser. No. 872,036
Int. Cl.[2] A01K *31/06*
U.S. Cl. 119—17 **13 Claims**



10. A poultry cage system comprising a plurality of spaced frame members, means interconnecting said frame members to one another, a plurality of rows of cages for housing said poultry extending between said frame members and means for supporting the cages from said frame members, said frame members each including a pair of upright legs, an upper cross-member and at least one lower cross-member extending between and connected to said legs, said lower cross-member having opposed ends and including a planar surface on at least one side thereof adjacent each said end and at least one protrusion transversely extending from each of such planar surfaces, each of said legs having a receptacle through which a respective protrusion on said lower cross-member is adapted to extend, each said protrusion when deformed providing a locking relation between said leg and lower cross-member, and locking means for securely connecting said upper cross-member and legs including a protrusion extending from the surface of one of said upper cross-member and said legs and a complementary receptacle in the other for receiving said protrusion in a locking relation when such protrusion is inserted therein.

4,195,593

PORTABLE DOG HOUSE

Troy Dunn, 3445 Ocean View, San Diego, Calif. 92113

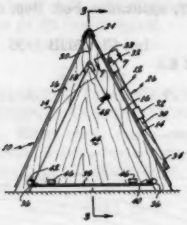
Filed Mar. 20, 1978, Ser. No. 890,651
Int. Cl.[2] E04D *1/36*; A01K *1/02*
U.S. Cl. 119—19 **1 Claim**

1. A portable pet-house comprising:

(a) a T-bar handle;

(b) a plurality of hingedly interconnected panels including two roof panels hinged together at their upper portions to define an upper joint, one of said roof panels having brackets slidably mounting said T-bar handle;

(c) said panels being errectable to define a self-supporting shelter and collapsible into a portable mode wherein said panels are substantially parallel and including a plurality of complimenting magnetic latch elements mounted in said roof panels to maintain same together when said panels are collapsed such that said panels are depending generally vertically from said handle when the latter is carried; and



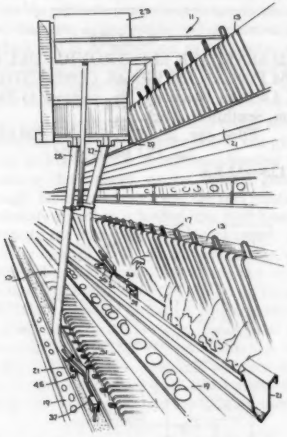
(d) one of said roof panels having a V-shaped roof cap pivoted thereto and pivotable across the joint between said roof panels when same are defining a shelter to weatherproof the meeting of said roof panels and being pivotal free of said joint when said panels are prepared for transport.

4,195,594

FEEDING SYSTEM FOR ANIMALS

Anthony J. Siciliano, South Lyon, and Serge Artamonoff, Northville, both of Mich., assignors to Diamond International Corporation, New York, N.Y.

Filed Jan. 25, 1978, Ser. No. 872,055
Int. Cl.[2] A01K *5/02*
U.S. Cl. 119—52 B **26 Claims**



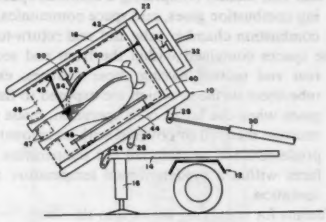
1. In an animal feeding apparatus in which feed is supplied to an elongated feed trough by means of a hopper disposed thereabove having extending therefrom a down spout terminating adjacent the feed trough, the hopper and down spout being adapted for movement along the length of the trough such that feed being supplied from the feed hopper is transferred to said feed trough via said down spout, the improvement comprising means disposed at the end of said down spout and ahead of said down spout with reference to the direction of travel thereof during feeding for sensing an accumulation of feed in the trough and means responsive thereto for causing said flow from said feed hopper to terminate operation for as long as said sensing means sense the presence of an accumulation of feed in said trough ahead of said down spout.

4,195,595

DEVICE FOR POSITIONING LIVESTOCK

Shraga Shimonovich, Moshav Banya, Israel

Filed Sep. 11, 1978, Ser. No. 941,323
Claims priority, application Israel, Sep. 12, 1977, 52922
Int. Cl.[2] A61D *3/00*
U.S. Cl. 119—103 **11 Claims**



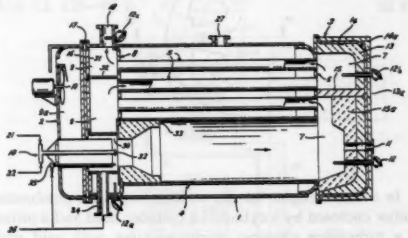
1. Apparatus for positioning livestock comprising:
frame means;
means for securing an animal in said frame means without requiring operator contact with the animal and including belt means secured to said frame means and located adjacent one side thereof; and
means, associated with said belt means, for engaging the side underneath portion of the animal, when the animal is located intermediate the belt means and the opposite side of said frame means, thus supporting the animal from the underneath at one side, and urging the animal against the opposite side of said frame means; and
means for orienting said frame means so as to position the animal in a desired orientation.

4,195,596

COMBUSTION OF HALOGENATED HYDROCARBONS

John C. Scheifley, Lake Jackson; Clark R. Shields, Angleton, and David E. Busby, Lake Jackson, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 710,960, Aug. 2, 1976, Pat. No. 4,125,593.
This application Sep. 11, 1978, Ser. No. 940,918
Int. Cl.[2] F22B *7/12*
U.S. Cl. 122—149 **11 Claims**



1. A water-cooled, horizontal fire-tube boiler having a front end section, a boiler section, and a rear end section, which comprises in combination
a boiler section comprising a generally cylindrically-shaped shell having a vertically-disposed metal tube-sheet at each end, a relatively large metal combustion chamber tube extending the length of, and within, said shell and communicating through said tube-sheets, a plurality of relatively

small metal return-tubes extending the length of, and within, the boiler shell and communicating through said tube-sheets, the combustion chamber tube and the return-tubes being in spaced-apart, horizontal relationship,

a front end section comprising a confined space for containing combustion gases, said space communicating with said return-tubes, and having feed means extending through said confined space for feeding air, supplemental fuel, and halogenated hydrocarbons into a burner nozzle within the combustion chamber tube,

a rear end section comprising a confined space for containing combustion gases, said space communicating with said combustion chamber tube and said return-tubes,

the spaces contained within the front end section and the rear end section having those surfaces, except for the tube-sheet surfaces, which are exposed to the combustion gases when the boiler is in operation, made of corrosion-resistant material or covered with an amount of insulation predetermined to maintain the temperature of such surfaces within a predetermined temperature range during operation,

a means for supplying water into the shell,

a means for controlling steam pressure in the range of about 150 to about 275 psig and for removing steam from the top of the shell,

and a means for removing combustion gases from one of the end sections.

4,195,597

TURBULENCE CHAMBER DIESEL ENGINE

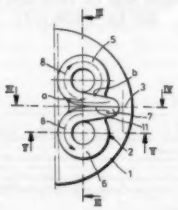
Peter Hofbauer, and Cornelia Schwarz, both of Wolfsburg, Fed. Rep. of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Filed Feb. 2, 1978, Ser. No. 874,471

Claims priority, application Fed. Rep. of Germany, Feb. 9, 1977, 2705271

Int. Cl.² F02B *23/06*

U.S. Cl. 123—30 C **3 Claims**



1. In a diesel engine having at least one main combustion chamber enclosed by a cylinder, a cylinder head and a piston, and a turbulence chamber communicating with said main combustion chamber by a passage in said cylinder head, wherein an end surface of said piston forming an internal wall of said main combustion chamber is provided with recesses symmetrically arranged with respect to said passage, the improvement wherein said recesses are toroid-shaped channels which meet in a radially extending inlet flow channel arranged adjacent said passage, each of said toroid-shaped channels surrounding a central area at the level of said piston end surface.

4,195,598

METHOD AND APPARATUS FOR DETERMINING THE INJECTION TIME IN EXTERNALLY IGNITED INTERNAL COMBUSTION ENGINES

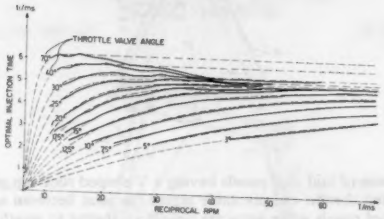
Jürgen Anlauf, Göppingen, and Hans Schnürle, Walheim, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 1, 1978, Ser. No. 930,110

Claims priority, application Fed. Rep. of Germany, Aug. 6, 1977, 2735601

Int. Cl.² F02B *3/00*

U.S. Cl. 123—32 EA **10 Claims**



1. A method of determining the injection time in externally ignited internal combustion engines including the steps of providing an rpm signal and a throttle valve angle signal, deriving a basic injection time signal on the basis of said rpm signal and said throttle valve angle signal, modifying said basic injection time signal by means of a controllable nonlinearity function generator containing an e-function to closely approximate an empirically derived optimal value for the injection time at given operating characteristics, maintaining the time constant of said function generator at a constant value and controlling the charging and/or discharging time of said function generator.

4,195,599

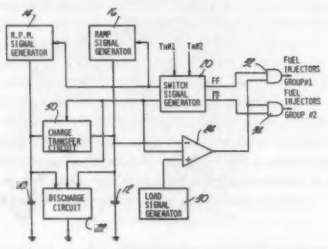
SPEED SENSITIVE ELECTRONIC FUEL CONTROL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

David G. Luchaco, Macungie, Pa., assignor to The Bendix Corporation, Southfield, Mich.

Filed Apr. 25, 1977, Ser. No. 790,625

Int. Cl.² F02B *3/04*

U.S. Cl. 123—32 EA **24 Claims**



1. A control system for producing an output signal indicative of the combination of two independent variables comprising:

first means for cyclically generating and storing a first signal having a value indicative of the value of a first independent variable;

storage means for storing a second signal;

transfer means for transferring said first signal to said storage means at the end of each cycle so that the initial value of said second signal at the beginning of each cycle is the value of said first signal at the end of the preceding cycle;

second means for generating a third signal increasing the value of said second signal stored in said storage means at a predetermined rate;

means for generating a fourth signal having a value indicative of the value of the second independent variable; and

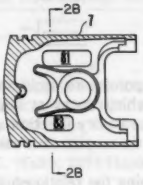
means for comparing the value of said second signal with said fourth signal to generate an output signal having a pulse width indicative of the time it takes from the beginning of each cycle for the value of said second signal to equal the value of the fourth signal.

4,195,600

CRANKCASE CHAMBER COMPRESSION TYPE TWO CYCLE INTERNAL COMBUSTION ENGINES

Yoshisuke Shingai, Hamamatsu, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Continuation of Ser. No. 677,252, Apr. 15, 1976, abandoned.
This application Jun. 30, 1978, Ser. No. 920,643
Int. Cl.² F02B *33/04*
U.S. Cl. 123—73 AA **4 Claims**



1. In a two-cycle internal combustion engine comprising a cylinder, a crankcase defining a crankcase chamber, a crankshaft supported for rotation in the crankcase chamber, a piston in the cylinder, said piston being hollow and defining a chamber closed at the top and open at the bottom such that the chamber within the piston is at all times in communication with the crankcase chamber, a connecting rod connected at one end to the crankshaft and at its other end to the piston, said cylinder containing intake, exhaust and scavenging ports arranged in circumferentially-spaced relation to each other to be alternately covered and uncovered by reciprocation of the piston and the cylinder so that during the compression stroke, a fuel mixture is compressed in the cylinder above the piston and a fuel mixture is sucked into the crankcase chamber below the piston and during the exhaust stroke, burned gases are discharged through the exhaust port and the fuel mixture sucked into the crankshaft chamber is forced into the chamber above the piston through the inlet port; the improvement comprising circumferentially-spaced perforations through the wall of the piston providing direct communication between the chamber within the piston and the wall of the cylinder through which the fuel mixture is caused to be forced by the pressure generated in the crankcase chamber during the exhaust stroke and spread by reciprocation of the piston against the wall of the cylinder to thus lubricate the same and wherein none of the perforations overlap the exhaust port, but certain of the perforations overlap the intake port and scavenging port.

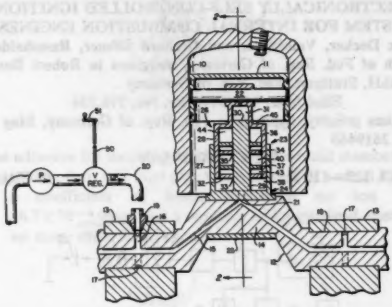
4,195,601

CONTROLLED COMPRESSION INTERNAL COMBUSTION ENGINE HAVING FLUID PRESSURE EXTENSIBLE CONNECTING ROD

George W. Crise, P.O. Drawer A, Danville, Ohio 43014

Filed Oct. 30, 1978, Ser. No. 955,924
Int. Cl.² F02B *75/04*
U.S. Cl. 123—78 E **2 Claims**

1. In an internal combustion engine which includes: a combustion cylinder into which combustible gases may be introduced, compressed and burned; an engine piston in said cylinder; a crankshaft having a throw journal and an oil passage which includes an outlet port opening radially outwardly of said throw journal; pump and valve means connected to supply oil under regulated pressure to the oil passage of said crankshaft; and a variable length connecting rod including relatively extensible and retractable sections connected between said piston and the throw journal of said crankshaft and defining in said connecting rod a plurality of relatively communicating hydraulic pressure chambers into which oil under pressure may be introduced to lengthen said connecting rod and from which oil may be discharged to shorten said connecting rod; that improvement which comprises:



(a) an inlet-outlet passage in said connecting rod in continuous communication with said hydraulic pressure chambers and arranged to communicate with the oil outlet port of the throw journal of said crankshaft only when the throw journal occupies a position slightly in advance of a top dead center position, said connecting rod closing the oil outlet port of the throw journal in all other rotative positions of the throw journal; and

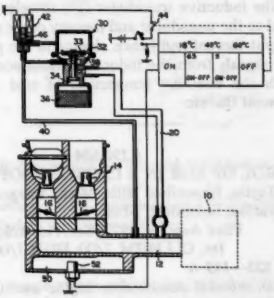
(b) dash pot means in said connecting rod arranged to retard the relative extension of the sections of said connecting rod while permitting free retraction thereof.

4,195,602

INTAKE CONTROL MEANS FOR INTERNAL COMBUSTION ENGINES

Ryuichi Yamashita, and Hiromitsu Matsumoto, both of Hamamatsu, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Mar. 6, 1978, Ser. No. 883,826
Int. Cl.² F02D *31/00*; F02M *23/04*
U.S. Cl. 123—97 B **12 Claims**



1. Intake control means for internal combustion engines comprising: secondary air supply conduit means for connecting with the atmosphere the intake passage means downstream

from the throttle valve of an engine carburetor; pressure responsive valve means disposed in said secondary air supply conduit means and adapted to open the secondary air supply conduit means for a predetermined time as the consequence of an abrupt reduction of pressure in said intake passage means; and means for disabling the opening of the pressure responsive valve means at all times when the engine temperature is below a predetermined value, and also at cool and warm temperatures disabling said opening for a brief period of time and thereafter enabling said opening.

4,195,603

ELECTRONICALLY SELF-CONTROLLED IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINES

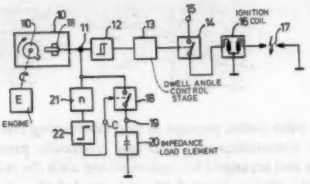
Heinz Decker, Vaihingen, and Gerhard Söhner, Remshalden, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 11, 1977, Ser. No. 776,734

Claims priority, application Fed. Rep. of Germany, May 3, 1976, 2619443

Int. Cl.[2] F02P *5/04*

U.S. Cl. 123—117 R **10 Claims**



1. Electronically self-controlled ignition system for an internal combustion engine (E) having

an ignition coil (16);

a controlled switch (14) serially connected with a primary winding of the ignition coil (16);

a spark gap (17) connected to the secondary winding of the ignition coil (16);

and comprising the combination

of an inductive transducer (10) coupled to the engine and rotating in synchronism therewith, the inductive transducer providing output signals to the controlled switch (14) to respectively connect, and disconnect current from a source to the ignition coil, with

an impedance load element (20) and means (18, 21, 22,C; 23) responsive to and controlled by an engine operation sensor responsive to an operating parameter of the engine selectively connecting said impedance load element (20) to the inductive transducer (10) to selectively connect a load to the transducer and thereby cause phase shift of the output thereof and hence change in the phase of the output signals from the inductive transducer in accordance with the selective connection of said impedance load element thereto.

4,195,604

CONTROL OF EGR IN A CLOSED LOOP EFI ENGINE

Lael B. Taplin, Bloomfield Hills, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Aug. 19, 1977, Ser. No. 826,002

Int. Cl.[2] F02M *7/00*; F02B *3/00*

U.S. Cl. 123—119 A **4 Claims**

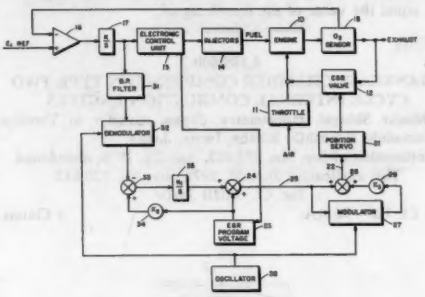
1. In an internal combustion engine having a combustion charge mixture control of the closed loop electronic fuel injection type, means for controlling the proportions of one of the constituents of the combustion charge, comprising

adjustable means for metering the flow of said one constituent to the engine combustion chamber;

means for adjusting said metering means in accordance with a predetermined program;

means for varying said adjusting means with an oscillatory function having a predetermined frequency and an amplitude which is a fixed percentage of said programmed adjustment;

means for sensing changes in the air/fuel ratio of the combustion charge of the engine;



detector means responsive to oscillatory outputs from said sensing means which occur at said predetermined frequency of said oscillatory function and providing an output indicative of the amplitude of said oscillatory outputs; and

means for determining the relationship between the output of said detecting means and the amplitude of said oscillatory function for correcting said adjusting means to maintain said relationship constant.

4,195,605

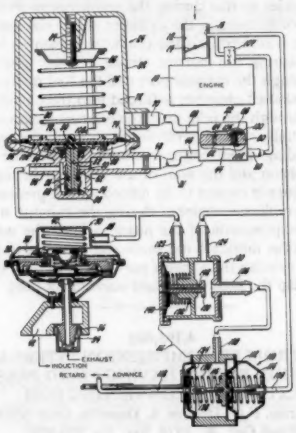
EXHAUST GAS RECIRCULATION CONTROL

Lawrence M. Weathers, Warren, and Carl A. Wellenkotter, Rochester, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 26, 1978, Ser. No. 900,173

Int. Cl.[2] F02M *25/06*

U.S. Cl. 123—119 A **2 Claims**



1. In an engine having an air induction passage, a recirculation passage for delivering exhaust gases to said induction passage, and an assembly permitting flow through said recirculation passage in response to a subatmospheric pressure signal and inhibiting flow through said recirculation passage in re-

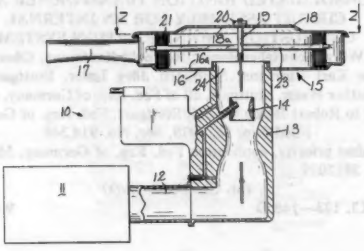
sponse to an atmospheric pressure signal: the improvement comprising a control unit having an inlet sensing a pressure signal in said induction passage which at least at times is subatmospheric, an outlet transmitting a pressure signal to said assembly, an atmospheric pressure bleed, valve means biased to a position inhibiting flow between said outlet and said bleed and permitting flow between said outlet and said inlet for transmitting said induction passage pressure signal to said assembly and movable to a second position permitting flow between said outlet and said bleed for transmitting an atmospheric pressure signal to said assembly, a diaphragm defining a portion of a chamber and responsive to pressure in said chamber below a certain level for effecting movement of said valve means to the second position, and a restricted opening connecting said chamber to said inlet for decreasing the pressure in said chamber below said level over at least a selected period of time, whereby said unit transmits said induction passage pressure signal to said assembly to thereby cause said assembly to permit flow through said recirculation passage for at least the selected period of time and thereafter transmits an atmospheric pressure signal to said assembly to thereby cause said assembly to inhibit flow through said recirculation passage.

4,195,606

METHOD AND APPARATUS FOR TREATING AIR FOR INTERNAL COMBUSTION ENGINES

Thomas F. Wallis, Jr., 5623 Boaz St., Apt. 91, Dallas; Asa M. Pearson, 4117 Lovers La., University Park, both of Tex. 75209, and Robert C. Wallis, 1074 Hartford Turnpike, North Haven, Conn. 06473

Filed Nov. 17, 1977, Ser. No. 852,080
Int. Cl.² F02M *7/00*
U.S. Cl. 123—119 E **9 Claims**



1. A method of treating combustion air for an internal combustion engine having means defining an air intake chamber, comprising the steps of subjecting air in said air intake chamber prior to mixture with fuel to radiation of ultraviolet light at a wavelength of substantially 2537 A° to treat the oxygen molecules prior to mixing the air with fuel.

4,195,607

BLOW-BY GAS RECIRCULATING DEVICE

Yasumasa Nagasaka, Okazaki; Haruki Furukawa, Toyota; Takao Maeda, Kariya, and Masatsugu Tsukatani, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

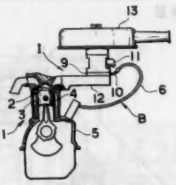
Filed Sep. 7, 1978, Ser. No. 940,296
Claims priority, application Japan, Mar. 27, 1978, 53-34106
Int. Cl.² F02M *25/06*
U.S. Cl. 123—119 B **7 Claims**

1. A blow-by gas-recirculating device for use in an engine having a blow-by gas-producing source and an intake system, comprising:

an inlet pipe for receiving the gas from the gas-producing source and communicating the gas to the intake system,

a member formed of heat-insulating material and having at least one through-opening forming part of the intake system,

means forming part of said member defining an inlet-pipe-admitting hole extending from an outer surface of said member to the peripheral surface of said one through-opening in said member, said inlet pipe being positioned within said inlet-pipe-admitting hole in said member, and



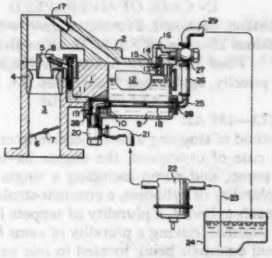
an adhesive for securing said inlet pipe and said member one to the other, said inlet pipe being formed of a metal having a coefficient of linear expansion no less than 16.7×10^{-6}/deg., and a modulus of longitudinal elasticity no more than 12980 kg/mm².

4,195,608

FUEL SUPPLY SYSTEM FOR ENGINES

Masakatsu Sanada; Toshimitsu Ito, both of Toyota, and Masahiko Nakada, Okazaki, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan

Filed Jun. 17, 1977, Ser. No. 807,525
Claims priority, application Japan, Mar. 22, 1977, 52/31358
Int. Cl.² F02M *37/20, 5/10, 15/00, 19/06*
U.S. Cl. 123—136 **7 Claims**



1. A fuel supply system for an internal combustion engine, comprising:

a carburetor having a float chamber and a vapor bleed passage connected to said float chamber;

a fuel tank;

a fuel pump;

a fuel supply passage means which conducts fuel from said fuel tank into said float chamber so as to maintain the lever of fuel therein through said fuel pump, and which includes at a middle portion thereof a passage portion which passes through said float chamber without direct communication from the passage portion to the float chamber.

4,195,609

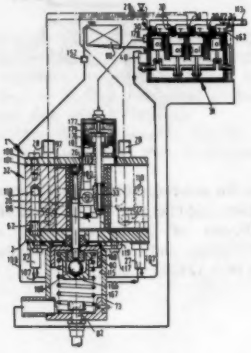
DEVICE FOR SUPPLYING FUEL TO A COMBUSTION ENGINE AND METHOD OF MANUFACTURING SAID DEVICE

Willem Brinkman, Velp, Netherlands, assignor to Holec, N.V., Hengelo, Netherlands

Division of Ser. No. 760,718, Jan. 19, 1977. This application Jun. 15, 1978, Ser. No. 915,740

Int. Cl.[2] F02M *39/00*

U.S. Cl. 123—139 E **5 Claims**



1. A device for delivering fuel to at least one atomizer of a combustion engine, in which the pump chamber of at least one fuel pump arranged in a pump housing has a displacement volume adjustable by actuating means, communicates through an inlet valve with a fuel supply and through an outlet valve with a fuel delivery part to be connected with the atomizer of the combustion engine and is defined in part by a one displacer body caused to reciprocate by at least one electro-magnet, the electro-magnet and the pump being mounted on a common frame plate, characterized in that the pump is mounted on the frame plate with the interposition of heat-insulating material.

4,195,610

METHOD AND DEVICE FOR STOPPING A FUEL-INJECTION INTERNAL COMBUSTION ENGINE IN CASE OF OVERSPEED

Dirk Bastenhof, Eaubonne, France, assignor to Societe d'Etudes de Machines Thermiques S.E.M.T., Saint-Denis, France

Filed Jul. 13, 1978, Ser. No. 924,287

Claims priority, application France, Sep. 23, 1977, 77 28798

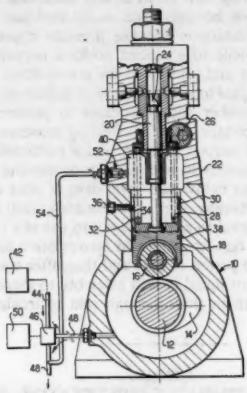
Int. Cl.[2] F02B *77/08*

U.S. Cl. 123—139 AZ **7 Claims**

1. A method of stopping a fuel-injection internal combustion engine in case of overspeed, the engine having at least one injection pump, said pump including a single pump housing having a plurality of cylinders, a constant-stroke reciprocating piston in each cylinder, a plurality of tappets for driving said pistons, a camshaft having a plurality of cams for driving said tappets, said camshaft being located in one part of the pump housing which is sealingly separated by said tappets from the rest of the pump housing, and an oil overflow line connected to the one part of the housing, wherein the method comprises:

providing a source of pressurized gas, sensing the speed of the engine, and, in case of overspeed, feeding pressurized gas into the one part of the housing through the oil overflow line to lift said tappets out of contact with their driving cams.

3. A device for stopping a fuel-injection internal combustion engine in case of overspeed, the engine having at least one injection pump, said pump including a pump housing having a plurality of cylinders, a pump piston in each cylinder, a plurality of tappets for driving said pistons, a camshaft having a plurality of cams for driving said tappets, the camshaft being located in one part of the pump housing and sealingly separated from the rest of the pump housing, and an oil overflow line connected to the one part of the housing, wherein the improvement comprises:



a source of pressurized gas and means for selectively connecting said source to said oil overflow line in case of overspeed to feed pressurized gas into the camshaft housing to lift said tappets out of contact with their driving cams.

4,195,611

CONSOLIDATED IGNITION TRANSFORMER AND CIRCUIT ASSEMBLY FOR AN INTERNAL COMBUSTION ENGINE IGNITION SYSTEM

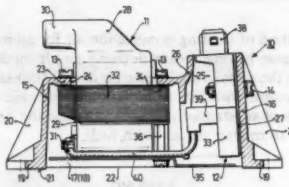
Paul Wörz, Schwieberdingen; Reinhold Kaufmann, Oberriexingen; Karl Ehrmann, Stuttgart; Jörg Issler, Stuttgart, and Günther Weiss, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 16, 1978, Ser. No. 916,348

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1978, 2812029

Int. Cl.[2] F02B *77/00*

U.S. Cl. 123—148 D **9 Claims**



1. A consolidated ignition system assembly for an internal combustion engine, comprising:

an ignition transformer embedded in a body (**28**) of cast resin encasing the primary and secondary windings thereof and the portion of the iron core thereof passing through said windings, said body being of generally cylindrical shape, said transformer having primary winding terminals (**31**) and a secondary winding terminal (**30**) extending from said body;

a transistorized circuit unit (**12**);

a base shell member of heat-conducting material having four walls in substantially rectangular configuration defining a mounting plane at an open bottom formed by said walls and having mounting eyes at the bottom of said walls,

three of said walls having an inward flange (23) at the same distance from and parallel to said mounting plane, said flange defining an opening (24) for said ignition transformer (11), said ignition transformer being mounted on said flange from the underside thereof, a fourth wall (16) and the two of said walls adjacent to said fourth wall forming, together with a web (26) contiguous to said flange and to said two walls adjacent to said fourth wall, a shell extension having an opening at the top, in addition to being open at the bottom, for partially enclosing said transistorized circuit unit and for allowing at least a connector thereof to protrude upwardly out of said base shell member, said transistorized circuit unit being mounted on said fourth wall of said base shell member.

4,195,612

MULTICYLINDER TWO-STROKE INTERNAL COMBUSTION ENGINE WITH ROTARY DISTRIBUTOR

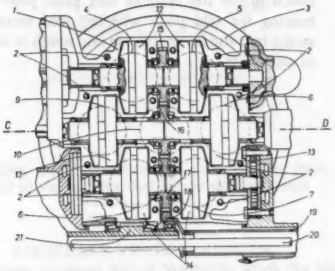
Hermann Klaue, Case Postale 151 Tour d'Ivoire 24e, CH-1820 Montreaux, Switzerland

Filed Dec. 15, 1977, Ser. No. 860,945

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1976, 2656681

Int. Cl.[2] F01L *7/00*; F02B *75/26, 33/04*

U.S. Cl. 123—190 BA **28 Claims**



1. A two-stroke internal combustion engine comprising:

a plurality of reciprocating piston working cylinders having their axes parallel to each other and arranged equiangularly in a circle about a central cavity,

a rotary distributor located in said central cavity and rotatable about a central axis parallel to said working cylinder axes, said rotary distributor having an outer cylindrical surface mating with an inner cylindrical surface which is fixed with respect to the working cylinders, means for rotating the rotary distributor in timed relationship with the reciprocating motion of the pistons,

said rotary distributor including internal passageways leading to the ports on its outer cylindrical surface, and said inner cylindrical surface including ports communicating with the working cylinders and mating with the ports on the outer cylindrical surface of the rotary distributor at certain times during the rotation of the latter,

whereby at least one combustion process function of the working cylinders is controlled by the rotary distributor,

and including means for delivering intake air into the rotary distributor, and said internal passageways arranged to deliver said air through said ports and into the working cylinders upon rotation of the rotary distributor.

4,195,613

DOUBLE-ACTING FOUR-CYLINDER HOT GAS ENGINE

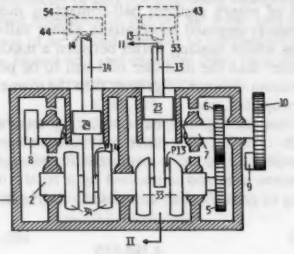
Jan C. Bratt, Malmö, and Bengt-Ove M. Moodysson, Åkarp, both of Sweden, assignors to Kommanditbolaget United Stirling (Sweden) AB & Co., Malmö, Sweden

Filed Apr. 14, 1978, Ser. No. 896,589

Claims priority, application United Kingdom, May 20, 1977, 21424/77

Int. Cl.[2] F02B *75/06*

U.S. Cl. 123—192 B **7 Claims**



1. A double-acting four-cylinder hot gas engine of the kind in which the cylinders are all parallel with one another and there are two synchronized crank-shafts with crankshaft axes parallel to one another, said crankshafts rotating in the same angular sense, each crank-shaft being connected to two pistons reciprocating along piston axes which intersect the axes of the respective crank-shaft, the intersections being axial spaced along the respective crankshafts, characterized in that for balancing purposes the engine is provided with a third shaft which is parallel to the two crank-shafts, gearing for driving the third shaft in rotation in synchronism with and in the opposite angular direction from the two crank-shafts, and at least two secondary counter-weights carried by the third shaft, which secondary counter-weights are spaced from one another in the axial direction of the third shaft and produce forces during rotation in directions which are diametrically opposite to one another with respect to the axis of the third shaft.

4,195,614

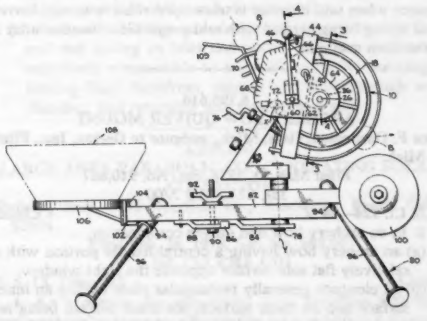
ROTATABLE COACTING MEMBERS FOR PROJECTING A BALL

Lorenzo J. Ponza, 910 Columbia St., Santa Cruz, Calif. 95060

Continuation of Ser. No. 579,308, May 21, 1975, abandoned. This application May 31, 1977, Ser. No. 801,845

Int. Cl.[2] F41B *3/04*

U.S. Cl. 124—1 **7 Claims**



1. A ball throwing machine which comprises

a pair of rotary resilient ball-contacting members having angularly-opposed ball-contacting surfaces whose spacing

varies between a maximum distance greater than the ball diameter and a minimum distance no greater than the ball diameter, and

means for rotating said ball-contacting members,

said rotary ball-contacting members each including a resilient section and a rigid back-up plate section cooperatively arranged to provide, in contact with the ball to be projected, a concentric depressed annular groove means at a preset position which precisely controls the point of tangential release of the ball for throwing thereof.

4. A ball throwing machine which comprises

a pair of rotary resilient ball-contacting members having angularly-opposed substantially planar ball-engaging surfaces whose spacing varies between a maximum distance greater than the diameter of a ball to be projected and a minimum distance no greater than the diameter of a ball to be projected, and

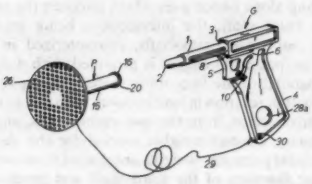
means supporting said ball-contacting members on rotary shafts connected for correlated rotative motion,

said rotary shafts being supported for rotation about non-common axes and connected by a rotary universal coupling to provide such correlated rotative motion.

4,195,615
RETRIEVABLE PROJECTILE GUN

Martin P. Belokin, Rte. 4, Hayward, Wis. 54843

Filed Nov. 25, 1977, Ser. No. 854,656
Int. Cl.[2] F41B 7/02
U.S. Cl. 124—16 8 Claims



1. A gun assembly with a retrievable projectile comprising: a gun including an elongated barrel having a front end and a rear end and also including a handle having a movable trigger, a projectile comprising an elongated member having a forward and rearward end, said member having means at its rearward end for releasable engagement by said trigger and also having a flat flexible element arranged transversely of and connected to said forward end of said member, said flat flexible element being formed as a screen-like material so as to insure flexibility thereof and complete contact of said element against a surface to be hit by said projectile, a compressible spring located within said member and compressible to provide a power source when said member is telescoped relative to said barrel, said spring being carried with said projectile when the latter is fired from said gun.

4,195,616
ARCHERY BOW QUIVER MOUNT

Rex F. Darlington, Hale, Mich., assignor to Darton, Inc., Flint, Mich.

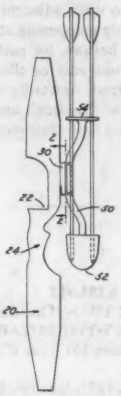
Filed May 30, 1978, Ser. No. 910,667
Int. Cl.[2] F41B 5/00
U.S. Cl. 124—24 R 4 Claims

1. In an archery bow and quiver combination,

(a) an archery bow having a central handle portion with a relatively flat side surface opposite the sight window,

(b) an elongate generally rectangular plate having an inner surface and an outer surface, the inner surface being secured to said side surface with the plate disposed in a direction longitudinally of the bow and said plate having a top edge and a side edge conjunctive at one corner of the plate, said top edge and said side edge having notches formed therein spaced from each other, and each having a re-entrant portion inwardly of the outer surface of said plate,

(c) a quiver having a body portion with a face surface to lie adjacent the outer surface of said plate in attached position, and



(d) a pair of headed pin extensions projecting from said face surface spaced from each other in the same dimension as said plate notches are spaced,

wherein engagement of one of said headed pins with the notch in the top edge of said plate provides a pivot bearing for said plate whereby said second pin may swing into and be retained in said notch in said side edge of said plate.

4,195,617
WOOD BURNING WATER-CIRCULATING STOVE

Frank A. Scopetti; Eric Vaughn, both of Ridgway, and Joseph T. Manno, Kane, all of Pa., assignors to Ridgway Steel Fabricators, Inc., Ridgway, Pa.

Filed Jul. 6, 1978, Ser. No. 922,587
Int. Cl.[2] F24C 13/00; F23M 7/00; F22B 31/00
U.S. Cl. 126—5 17 Claims

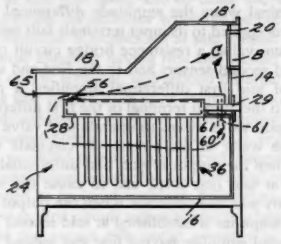
1. A wood or coal burning stove comprising

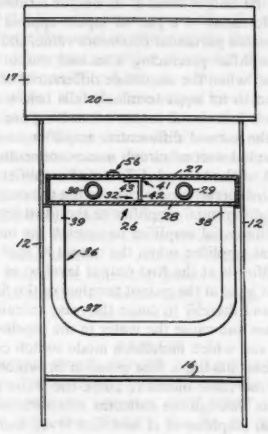
walls defining a fire chamber, with a flue disposed in one of said walls,

a door in one of said walls providing access to the fire chamber, and

means for circulating water through the fire chamber to heat the water with a fire burning in the fire chamber, said means including a manifold having an inlet pipe and an outlet pipe extending into the hollow interior thereof and passing through said walls; means for preventing short-

circuiting between said inlet and outlet pipes; means supporting said manifold in a generally horizontal plane, fuel





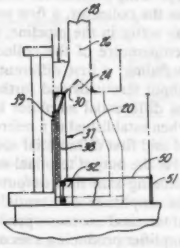
supporting members extending downwardly from said manifold to support the fuel below said manifold.

4,195,618

FIREPLACE VENTING SYSTEM

John E. Kellogg, deceased, late of Northville, Mich. (by Marian B. Kellogg and Nancy L. Lawson, heirs), and by Rebecca J. Nagy, heir, Plymouth, Mich., assignors to Larry Lawson, Northville, Mich.

Filed Dec. 30, 1977, Ser. No. 865,974
Int. Cl.[2] F24B *1/18, 7/00*
U.S. Cl. 126—120 **3 Claims**



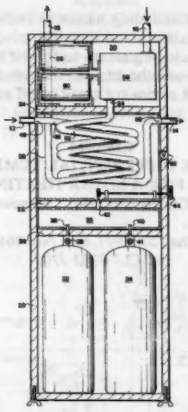
1. In a fireplace venting system, the combination of a combustion chamber, a rectangular opening between said combustion chamber and a space to be heated, an inverted U-shaped manifold means forming top and opposite sides of the perimeter of said opening, duct means delivering air to said manifold means from an air inlet disposed exterior to the space to be heated, a plurality of uniformly spaced holes in said manifold means at the top and at the sides of perimeter of said chamber opening, said holes in each of said sides and top being uniformly spaced with edges of adjacent holes in horizontal alignment with each other to provide a substantially continuous uninterrupted wall of air between said combustion chamber and the space to be heated, said duct means being substantially equal in cross sectional area to the total area of said holes, the bottom of the perimeter of said opening being inperforate, said space holes being operative to deliver air from said holes to provide a curtain of air at said opening to substantially isolate the space to be heated and said chamber from each other.

4,195,619

APPARATUS FOR HEATING THE AIR AND SUIT OF A FREE SWIMMING DIVER

James P. Hollen, Rte. 4, Box 965 - Lot 4, High Point, N.C. 27263

Filed Jul. 5, 1978, Ser. No. 922,031
Int. Cl.[2] A61F *7/06*
U.S. Cl. 126—204 **3 Claims**



1. A self-contained heating device for heating the air supply and suit of an underwater diver comprising:

(a) an enclosed heat exchange chamber and means for introducing heat into the space therein;

(b) a first coil within said chamber having an inlet and an outlet and a means for attaching said inlet to a source of oxygen and said outlet to a diver's mask;

(c) a second coil within said chamber separate from said first coil and having an inlet and outlet, said inlet and outlet selectively connectable to a diver's suit and receiving a heating fluid therefrom, passing said fluid through said chamber, and returning said fluid to said suit.

4,195,620

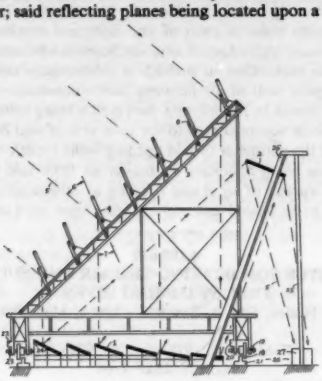
LARGE AREA PARABOLIC CONCENTRATING SOLAR COLLECTOR

Rudolph Rust, 8192 Deerfield Dr., Huntington Beach, Calif. 92646

Filed Feb. 28, 1978, Ser. No. 882,047
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—425 **8 Claims**

1. An apparatus for converting solar radiation into high temperature heat energy wherein the solar radiation is directed downward by means forming reflecting planes onto a stationary array of axially shortened, off axis primary parabolic mirrors arranged such that said downward directed radiation is

concentrated upon a flat secondary reflecting means located adjacent to said array and by which the concentrated radiation is directed downward into a stationary radiation to enthalpy exchanger; said reflecting planes being located upon a rotating



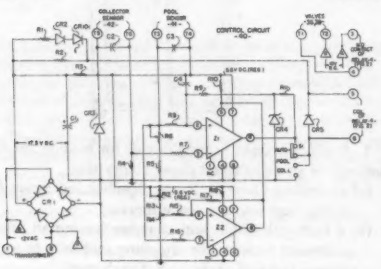
gantry, said gantry including means to enable said gantry to follow the sun in azimuth and means to pivotally mount said reflecting planes including means to follow the suns radiation in elevation to maintain the angle of incidence of the suns rays vertically upon said stationary array of off axis mirrors.

4,195,621

SOLID STATE DIFFERENTIAL TEMPERATURE REGULATOR FOR A SOLAR HEATING SYSTEM

Dale C. Firebaugh, Carson City, Nev., assignor to Richdel, Inc., Carson City, Nev.

Filed Dec. 27, 1977, Ser. No. 864,333
Int. Cl.[2] F24J 3/02
U.S. Cl. 126—416 3 Claims



1. A solid state differential temperature control circuit for regulating a solar heating system, said solar heating system including a water circulating assembly including a pipeline and a pump for circulating water from a water-containing receptacle through the pipeline and back into the receptacle, a solar collector coupled to the pipeline, and valve means mounted in said pipeline to control the flow of water through said pipeline, said valve means having a first operating position for causing the water in the pipeline to circulate through the collector, and having a second operating position for causing the water in the pipeline to by-pass the collector, a first sensor for sensing the temperature of the water in the pipeline, and a second sensor for sensing the temperature of the collector, said solid state control circuit including: a first differential amplifier having first and second input terminals and further having an output terminal, said first differential amplifier having a third input terminal which when established at a reference potential squelches the output of said first differential amplifier and develops a first output level at the output terminal and said first differential amplifier producing said first output level at the output terminal when the amplitude differential of a pair of inputs applied to its input terminal exceeds a particular value, and said first differential amplifier producing a second output level at its output terminal when the amplitude differential of said first pair of inputs applied to its input terminals falls below a particular minimum value; a resistance bridge circuit connected to the first and second sensors and to the first and second input terminals of said first differential amplifier; a relay circuit connected to the output terminal of the first differential amplifier and to said valve means to operate said valve means so as to cause the water in the pipeline to circulate through the collector when the output of said first differential amplifier is established at said first level, and to cause the water in the pipeline to by-pass the collector when the output of said first differential amplifier is established at said second level; a second differential amplifier having first and second input terminals and an output terminal, said second differential amplifier producing a first output level at its output terminal when the amplitude differential of a pair of inputs applied to its input terminals exceeds a particular maximum value, and said second differential amplifier producing a second output level at its output terminal when the amplitude differential of said pair of inputs supplied to its input terminals falls below a particular minimum value; first circuit means connecting one of the input terminals of the second differential amplifier to a source of reference potential, second circuit means connecting the other input terminal of the second differential amplifier to the first sensor; and third circuit means connecting the output terminal of the second differential amplifier to the third input terminal of said first differential amplifier to squelch the output of said first differential amplifier when the output of said second differential amplifier is at the first output level so as to establish the first output level at the output terminal of the first differential amplifier and thereby to cause the relay circuit to operate the valve means and cause the water in the pipeline to bypass the collector, and which includes a mode switch connected in said relay circuit having a first position in which said relay circuit causes the valve means to cause the water in the pipeline to circulate through the collector when the output of the first differential amplifier is at said first level, and said mode switch having a second position in which said relay circuit causes the valve means to cause the water in the pipeline to by-pass the collector when the output of the first differential amplifier is at said first level.

2. A solid state differential temperature control circuit for regulating a solar heating system, said solar heating system including a water circulating assembly inciuding a pipeline and a pump for circulating water from a water-containing receptacle through the pipeline and back into the receptacle, a solar collector coupled to the pipeline, and valve means mounted in said pipeline to control the flow of water through said pipeline, said valve means having a first operating position for causing the water in the pipeline to circulate through the collector, and having a second operating position for causing the water in the pipeline to by-pass the collector, a first sensor for sensing the temperature of the water in the pipeline, and a second sensor for sensing the temperature of the collector, said solid state control circuit including: a first differential amplifier having first and second input terminals and further having an output terminal, said first differential amplifier having a third input terminal which when established at a reference potential squelches the output of said first differential amplifier and develops a first output level at the output terminal and said first differential amplifier producing said first output level at the output terminal when the amplitude differential of a pair of inputs applied to its input terminal exceeds a particular value, and said first differential amplifier producing a second output level at its output terminal when the amplitude differential of said first pair of inputs applied to its input terminals falls below a particular minimum value; a resistance bridge circuit connected to the first and second sensors and to the first and second input terminals of said first differential amplifier; a relay circuit connected to the output terminal of the first differential ampli-

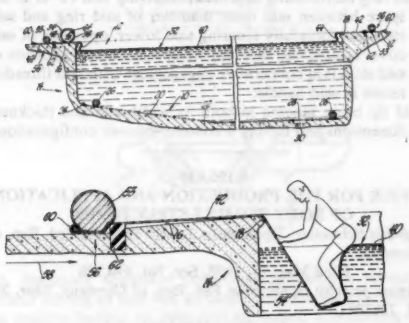
fier and to said valve means to operate said valve means so as to cause the water in the pipeline to circulate through the collector when the output of said first differential amplifier is established at said first level, and to cause the water in the pipeline to by-pass the collector when the output of said first differential amplifier is established at said second level; a second differential amplifier having first and second input terminals and an output terminal, said second differential amplifier producing a first output level at its output terminal when the amplitude differential of a pair of inputs applied to its input terminals exceeds a particular maximum value, and said second differential amplifier producing a second output level at its output terminal when the amplitude differential of said pair of inputs supplied to its input terminals falls below a particular minimum value; first circuit means connecting one of the input terminals of the second differential amplifier to a source of reference potential, second circuit means connecting the other input terminal of the second differential amplifier to the first sensor; and third circuit means connecting the output terminal of the second differential amplifier to the third input terminal of said first differential amplifier to squelch the output of said first differential amplifier when the output of said second differential amplifier is at the first output level so as to establish the first output level at the output terminal of the first differential amplifier and thereby to cause the relay circuit to operate the valve means and cause the water in the pipeline to bypass the collector, and which includes a feedback circuit connected between the output terminal and one of the input terminals of the first differential amplifier; and a voltage regulating circuit connected to the feedback circuit to cause the feedback voltage to be independent of exciting voltage variations and thereby to render the operating points of the first differential amplifier independent of such exciting voltage variations.

4,195,622

SWIMMING POOL COVER AND SOLAR HEATER

John Dolza, 810 State Rd., Fenton, Mich. 48430, and Paul B. Dolza, 460 Fifth St., Montara, Calif. 94037

Filed Oct. 28, 1977, Ser. No. 846,512
Int. Cl.[2] F24J *3/02;* E04H *3/18*
U.S. Cl. 126—415 **20 Claims**



1. A solar heating assembly for use with a swimming pool comprising; solar energy collection means having a specific gravity greater than that of water for heating the water in a swimming pool, and control means for varying the absorptive capacity of said collection means to control the temperature of the water, said solar energy collection means including at least one dark-colored mat and wherein said specific gravity of said dark-colored mat is sufficiently greater than that of water to allow said mat to sink to the bottom of the swimming pool and be positioned thereon, said mat being made of a pliable material and said control means including a crossbar member to facilitate rolling of said mat whereby the surface area of the mat may be varied to provide said controlling of the temperature of the water.

5. A swimming pool cover assembly comprising; cover means made of pliable material for covering a swimming pool, at least one floatable roller means extending generally linearly between opposite ends thereof and operatively connected with said cover means and extending between opposite edges of the perimeter of said cover means, said roller means including an inflatable air sac having a cylindrical configuration and closed ends whereby said roller means may be rotated about an axis extending between said opposite ends thereof for rolling and unrolling said cover means between rolled and unrolled positions.

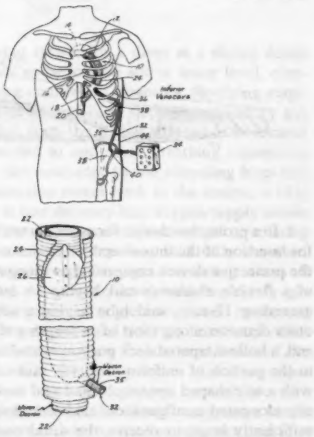
19. A swimming pool cover assembly comprising; cover means made of pliable material for covering a swimming pool, and locking means responsive to stress in said cover means for allowing limited movement of said cover means and for applying a resistance to said movement during said movement with said movement being sufficient to form a weight-supporting pocket below the surface of the surrounding water in said cover means and for locking said cover means in position after allowing said limited movement of said cover means.

4,195,623

PARALLEL AORTA BALLOON PUMP AND METHOD OF USING SAME

Robert H. Zeff, 4220 Foster Dr., and Steven J. Phillips, 6023 N. Waterbury Rd., both of Des Moines, Iowa 50312

Filed Jul. 21, 1977, Ser. No. 817,728
Int. Cl.[2] A61F *1/24;* A61M *1/03;* F04B *9/12*
U.S. Cl. 128—1 D **26 Claims**



1. An implantable parallel aorta balloon pump for pumping blood from the descending aorta to the ascending aorta comprising,

a valveless open flexible substantially straight inner tube positioned in a flexible substantially straight outer tube,

connecting means on the one end of said inner tube for connecting said one end to a descending aorta,

connecting means on the other end of said inner tube for connecting said other end to an ascending aorta,

a balloon positioned between the walls of the inner and outer tubes for engagement against only one side of the inner tube wall, and said balloon having one end adjacent said one end of said inner tube and an opposite end positioned adjacent the other end of said inner tube,

an air drive means connected to said one end of said balloon alternately inflating and deflating said balloon whereby said one side of the inner tube wall is collapsed when said balloon is inflated thereby providing a pumping action in

said inner tube in direction towards the other end of said balloon to move blood from said one end of said inner tube to the other end of said inner tube.

4. A method of assisting the heart comprising the steps of,

implanting in the body without interrupting the flow of blood through the heart and its circulation system a balloon pump including a substantially straight open and flexible passageway parallel to and connected between the ascending aorta and descending aorta and positioning an inflatable balloon on one outside wall of the parallel passageway and providing a flexible outer tube on an inner tube with the balloon therebetween,

connecting an external gas drive means to the pump and extending a tube from the lower end of the balloon to outside the body, and

synchronizing the pumping action to provide pulsations 180° out of phase with the heart thereby producing upwardly moving pressure waves in the parallel passageway as the balloon fills from the lower end to the upper end.

4,195,624

TUBULAR SHEATH FOR FACILITATING THE INSERTION OF AN ENDOSCOPE

Donald D. Douglas, 708 Highland Ter., Williamsport, Pa. 17701

Filed Jun. 9, 1978, Ser. No. 914,164

Int. Cl.[2] A61B 1/06; A61M 25/00

U.S. Cl. 128—8 **5 Claims**

1. In a protective device for assembly with an endoscope and for insertion of the thus assembled elements into an esophagus, the protective device comprising an elongated tube composed of a flexible elastomer and having an outside diameter not exceeding 17 mm., said tube having a substantially uniform outer diameter along most of its length and a solid tapered tip end, a hollow tapered neck portion extending from said tip end to the portion of uniform diameter, said tube being provided with a tear shaped opening behind said neck portion of generally elongated configuration, said tear shaped opening being sufficiently large to receive the distal end of an endoscope therethrough, said opening being configured so as to provide resilient support for a portion of an endoscope near the distal end when the distal end is received in said tapered neck portion, the wall defining the tear shaped opening at the area most remote from the solid tapered tip and being resiliently collapsible to facilitate insertion of the forward end of an endoscope through the tear shaped opening and into the tube so that an endoscope can engage interiorly of the tube with its side wall with a forward end of the endoscope being disposed in close proximity to said solid tapered tip end of the tube, said tube having means in said tapered neck portion to provide for bleed-off of air when said endoscope is being inserted into said tapered neck portion, said tear shaped opening having a generally circular portion terminating in a relatively narrow elongated slot parallel to the axis of the tube, said slot having a length greater than and a width less than the diameter of the circular portion, said tear shaped opening having its narrowest end in closest proximity to said solid tapered tip end.

4,195,625

GUM CLEANING IMPLEMENT

Michelene F. Bukowski, Los Angeles, Calif., assignor to Mark F. Bukowski

Filed Jun. 12, 1978, Ser. No. 914,537

Int. Cl.[2] A61L 7/00

U.S. Cl. 128—62 A **3 Claims**

1. An oral implement, including:

a tip portion, said tip portion including a tip and a stem, and stem hving a threaded portion remote from said tip and an unthreaded portion between said threaded portion and said tip, said stem having a diameter less than the diameter of said tip at the juncture between said stem and said tip, whereby a shoulder is formed;

a cover configured to envelope said tip and having a lower, open end extending beyond said shoulder when said cover is in position on said tip;

a handle having a common direction with said tip portion and having a threaded recess in one end thereof dimensioned to receive said threaded portion of said stem; and,

a ring, having an inside diameter exceeding the diameter of said stem and a length corresponding to the length of said unthreaded portion of said stem;

said ring surrounding said stem, receiving said cover in the space between said inner diameter of said ring and said stem and forcefully securing said lower, open end of said cover against said shoulder when said threaded portion of said stem is in cooperative engagement with said threaded recess in said handle;

said tip being tapered in both its width and and thickness dimensions and having a concavo-convex configuration.

4,195,626

DEVICE FOR THE PRODUCTION AND APPLICATION OF BODY STIMULI STRUCTURES

Helgi-Jón Schweizer, Egerstrasse 3, 8918 Diessen, Fed. Rep. of Germany

Filed Mar. 27, 1978, Ser. No. 890,728

Claims priority, application Fed. Rep. of Germany, Mar. 29, 1977, 2713891

Int. Cl.[2] A61B 5/00

U.S. Cl. 128—774 **7 Claims**

2. Apparatus for producing body responsive stimuli, comprising:

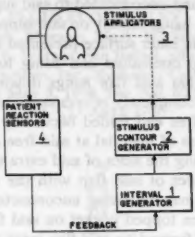
an interval generator for producing signals which have values that define the duration of intervals for individual sequences of intervals,

a stimulus signal contour generator for producing time-varying stimulus signal contours within the respective defined intervals,

a plurality of stimulus generators, respectively responsive to stimulus signal contours in the respective sequences by producing body responsive stimuli,

means for coupling the signal sequences from said contour generator to the respective stimulus generators,

means for detecting various reactions of a body to respective stimuli,



means for producing feedback signals representative of reactions, and

means for coupling said feedback signals to said interval generator for said generator to respond by altering said intervals in correspondence with the characteristic of the feedback signal.

4,195,627

BREATHING APPARATUS WITH FLOW CONTROL

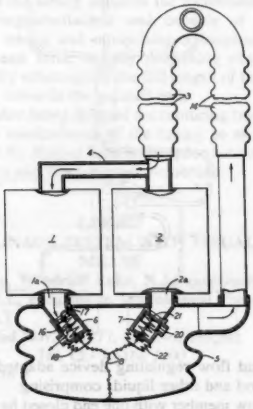
Klaus Haertle, Berlin, Fed. Rep. of Germany, assignor to Auergesellschaft GmbH, Berlin, Fed. Rep. of Germany

Filed Jul. 17, 1978, Ser. No. 924,996

Claims priority, application Fed. Rep. of Germany, Jul. 26, 1977, 2733601

Int. Cl.[2] A62B *7/08, 7/10*

U.S. Cl. 128—202.26 **8 Claims**



1. Breathing apparatus comprising an oxygen liberating canister having an inlet and an outlet, a carbon dioxide absorbing canister having an inlet and an outlet, a breathing bag having two inlets and an outlet, an inhalation tube connected to the bag outlet, an exhalation tube, conduit means connecting the exhalation tube with said canister inlets and said canister outlets to said bag inlets, valve means in said conduit means for controlling the proportion of exhaled air flowing through each canister, said valve means normally being positioned to direct exhaled air flow through the oxygen liberating canister while shutting off air flow through the carbon dioxide absorbing canister, said valve means being movable to a second position to shut off air flow through the oxygen liberating canister and direct the air flow through the other canister, and means operated by said bag when it is inflated for moving said valve means from normal position to said second position.

4,195,628

DEEP SEA DIVING SYSTEM HAVING A CLOSED RESPIRATORY GAS CIRCULATION SYSTEM

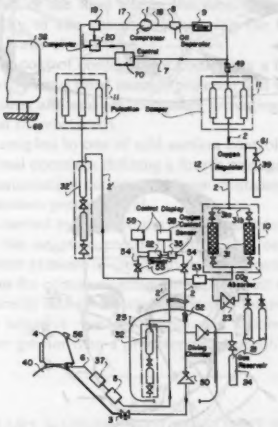
Wolfgang Lübitzsch, Lubeck, and Joachim Gelhaus, Stockelsdorf, both of Fed. Rep. of Germany, assignors to Drägerwerk Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 25, 1977, Ser. No. 844,835

Claims priority, application Fed. Rep. of Germany, Oct. 23, 1976, 2648141

Int. Cl.[2] B63C *11/20*

U.S. Cl. 128—201.27 **11 Claims**



1. A deep-sea diving system for a diver at a diving depth with a station adapted to be located above water level, comprising diver breathing connection means for supplying respiratory gas to the diver at the diving depth, a respiratory gas delivery line extending from the station adapted to be located at water level connected to said diver breathing connection means, and a return line connected to and extending from said diver breathing connection means back to the station, a CO_2 absorber connected in said delivery line, oxygen supply means connected in said delivery line, and respiratory gas circulating means connected in said delivery line, said CO_2 absorber, oxygen supply means and respiratory gas circulating means all adapted to be located above water level, said respiratory gas circulating means comprising a single compressor connected directly between said gas return and delivery lines for producing a pressure difference necessary for the circulation of the respiratory gas volume at the diving depth, said compressor including an inlet and an outlet, a bypass control line connected between said inlet and outlet of said compressor, means for sensing the pressure in said return line adjacent said inlet and connected to said bypass control line and means for controlling the cross-sectional flow through said bypass line from said outlet back to said inlet to increase the cross-sectional flow when the pressure in the return line drops below a selected value, to permit a constant flow through said compressor equal to the sum of a flow in said bypass control line plus a flow through said delivery line.

4,195,629

FACE MASK

George C. Halford, Mentor, Ohio, assignor to Halbrand, Inc., Willoughby, Ohio

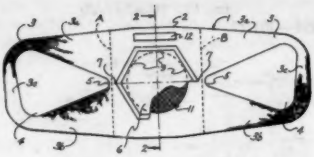
Continuation of Ser. No. 83,544, Oct. 23, 1970, abandoned. This application Jul. 31, 1974, Ser. No. 493,707

Int. Cl.[2] A62B *7/00*

U.S. Cl. 128—206.13 **6 Claims**

1. A face mask of the class described, when disposed on the face of a user, comprising a generally rectilinear, relatively

thin, normally flat, uniform thickness plastic foam material body, having a central section covering the oral and nasal passage areas of the face of a user, a pair of earpiece members extending from the central section, each of said members having a generally triangular opening therein, certain of the apices of said openings being closely adjacent the central section aforesaid, whereby triangular areas of the body alongside the said openings provide the connection of the central section



with the earpiece members, the ears of the user extending through the openings and said triangular areas on each side being twisted into overlapping relationship, causing the central section to conform closely to the chin and nose of the user of such mask, and the portions of said triangular openings at said apices providing a looser positioning of the mask material at said apices, and more close conformance to facial contours spaced therefrom toward the ears of such user.

4,195,630

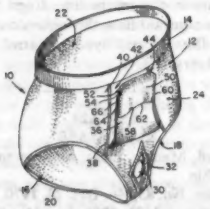
MEN'S UNDERGARMENTS

Thomas J. Connery, deceased, late of Ft. Lauderdale, Fla., and by Ruth Connery, executrix, 3250 NE. 28th St., Apartment 607, Ft. Lauderdale, Fla. 33308, assignors to Patricia Connery Koko; Marie H. Koko, both of Oak Park, Ill. and Ruth Connery, Fort Lauderdale, Fla.

Continuation-in-part of Ser. No. 751,910, Dec. 17, 1976, abandoned. This application Nov. 7, 1977, Ser. No. 849,401

Int. Cl.[2] A61F 5/40

U.S. Cl. 128—159 **2 Claims**



1. A men's undergarment comprising:

supporting means for supporting a scrotum/testicles, said supporting means including a body encircling portion which is in the form of a brief having an opening defined therein through which a penis is received;

an elongate protective flap connected at one end thereof to said supporting means and having another end and sides thereof free and unconnected to said supporting means so that said flap hangs loosely on said supporting means, said flap having an inner surface presented toward said opening, said flap connected end being located above said opening so that said flap hangs downwardly over said opening and completely covers same, said protective flap having said free end folded back over itself to form an extra thickness of material at said free end and fastening means fastening the sides of said extra thickness of material to the sides of said flap with the end of said extra thickness of material being unconnected to said flap to define an open topped pocket on said flap free end, said pocket being formed on said flap inner surface and being free and unconnected to said supporting means, a penis fitting into said pocket via said open top to be accommodated in said pocket so that such testicles/scrotum is supported by said support means and is separated from such penis and such penis is encased in said pocket.

4,195,631

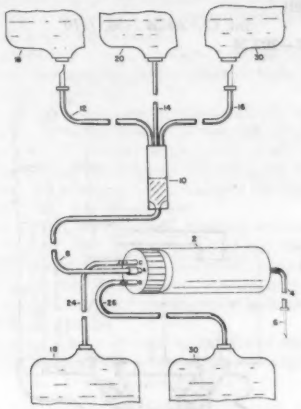
FLOW REGULATING DEVICE USEABLE IN PLASMA PHERESIS

Keith K. Baucom, 40 Abbey Ct., Ramsey, N.J. 07446

Filed Jun. 14, 1978, Ser. No. 915,389

Int. Cl.[2] A61M 5/00

U.S. Cl. 128—214 R **10 Claims**



1. A liquid flow regulating device adapted to control the flow of blood and other liquids comprising:

(a) a hollow member with one end closed having tube means extending through said closed end to communicate liquid to and from a donor;

(b) a liquid flow control member closing the other end of said hollow member there being a passageway for the flow of liquid through said liquid flow control member;

(c) a dial member in engagement with said blood control member so as to be rotatable with respect thereto;

(d) at least two passageways extending through said dial mechanism for the passage of liquid;

(e) selection means of said dial mechanism and on said blood control member for positively selectively aligning one of said dial mechanism passageways and said liquid flow control member passageway; and

(f) means for conducting liquid to and from said dial mechanism passageway; and

(g) said hollow member, said dial member, said control

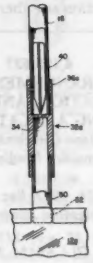
member and the passageways thereto through being constructed and arranged for straight-line liquid flow.

4,195,632

FLUID FLOW VALVE

Wendell R. Parker, Moraga; Mark H. Silverman, Redwood City, and Willis L. Warner, San Rafael, all of Calif., assignors to Cutter Laboratories, Inc., Berkeley, Calif.

Filed May 3, 1978, Ser. No. 902,328
Int. Cl.² A61J 1/00
U.S. Cl. 128—272 **10 Claims**



1. In a system for handling fluids which includes at least one container in communication with flexible tubing, a fluid flow valve system which comprises:

a pierceable membrane lying transversely in the flow path of the tubing and adapted to prevent fluid flow therethrough;

a spike member having a pointed end and positioned within a portion of the tubing adjacent the membrane, the spike member being unattached and capable of movement within the tubing and comprising a longitudinal body having at least three radially projecting ribs extending longitudinally substantially the full length of the body and converging towards the pointed end;

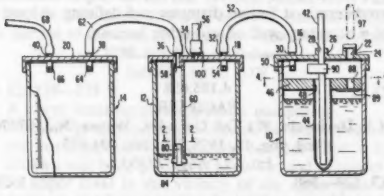
the spike member being adapted for rupturing the membrane by external manipulation of the tubing so as to create a passageway for flow of fluid in the space between any two adjacent ribs and the ruptured membrane.

4,195,633

CHEST DRAINAGE SYSTEM WITH VISUAL FLOAT MEANS

John R. Nehring, Woodcliff Lake, N.J., and George E. King, Barrington, R.I., assignors to International Paper Company, New York, N.Y.

Filed Nov. 7, 1977, Ser. No. 849,242
Int. Cl.² A61M 1/00
U.S. Cl. 128—276 **15 Claims**



1. Apparatus for collection of a fluid comprising:

a collection container,

means carried by said collection container defining a first passage providing for communication between said collection container and a source of fluid to be collected external to said apparatus,

a transparent seal container for containing a fluid,

means defining a second passage between said collection container and said seal container providing for communication therebetween,

means carried by said seal container providing for a fluid seal in said second passage, said fluid seal means including a tube in communication with said second passage and having a lower end adapted to be disposed below the level of fluid in said seal container, and a float disposed within said tube for increasing the visual perception of the rise and fall of the fluid within the tube, said float having a plurality of ribs thereon for spacing the float from the inner walls of said tube,

a suction control container for containing a fluid,

means defining a third passage between said suction control container and said seal container providing for communication therebetween,

means coupled to one of said suction control container and said seal container defining a fourth passage providing for communication between said one container and a source of vacuum pressure, and

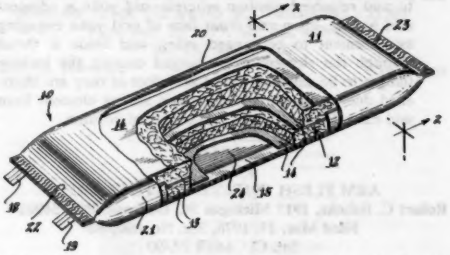
means carried by said suction control container for controlling the negative pressure within said containers when vacuum pressure is applied to said one container including means for communicating atmospheric air external to said apparatus into said suction control container in response to a negative pressure within said suction control container greater than a predetermined negative pressure.

4,195,634

SANITARY NAPKIN WITH RESILIENT STIFFENING MEANS

Walter A. DiSalvo, North Arlington; Robert B. Cubitt, Saddle Brook, and Francis J. Coury, Highland Park, all of N.J., assignors to International Playtex, Inc., Stamford, Conn.

Filed Jul. 3, 1978, Ser. No. 921,654
Int. Cl.² A61F 13/116
U.S. Cl. 128—290 R **11 Claims**



1. A sanitary napkin comprising an absorbent core; a liquid pervious material surrounding said core; a sheet of a liquid impervious material forming a moisture barrier and substantially covering the bottom portion of said napkin, said barrier being positioned between said core and said liquid pervious material; a plurality of track adhesive means disposed on the bottom portion of said napkin and spaced from the lateral edges thereof for securing said napkin to an undergarment; and stiffener means positioned between said core and said liquid impervious material the width of said stiffener means being at least equal in dimension to the distance between said track adhesive means but less than the width of said napkin, said stiffener means consisting of a material having a high enough level of resiliency and stiffness to resist side compression of said napkin to a sufficient degree to aid in retaining said adhesive means in place on said undergarment when compressive forces are applied to said napkin during use.

4,195,635

EAR TAG INSTALLING TOOL

Eugene B. Ritchey, Rte. 3, Box 58, Brighton, Colo. 80601

Filed May 24, 1978, Ser. No. 909,044
Int. Cl.[2] A61B 17/00
U.S. Cl. 128—330 **8 Claims**

1. A hand tool for applying a tag to an element to be tagged, wherein the tag is of the type which is made of resilient elastomeric material and includes a laterally extensive base for receiving indicia, an anchoring head in the general plan form of an arrowhead with a narrow leading end or tip and rearwardly diverging locking flanges joined to the base by a narrow neck, said tool comprising:

a flat sharpened blade for piercing the element to be tagged;

a handle for holding said tool to thrust said blade through the element to be tagged to form an incision through which the head of the tag can pass;

a narrow shank interconnecting said blade and said handle; and

a sliding element movable between an extended position and a retracted position, said sliding element having:

an elongated member on each side of said shank slidably received in said handle; and

a U-shaped yoke having a front face and interconnecting the extending ends of said members and extending around a portion of said blade when said sliding element is in extended position, said shank and each of said members, together with said yoke forming a slot therebetween, said sliding element being movable from said extended position to said retracted position wherein said yoke is adjacent said handle, upon said front face of said yoke engaging said element to be tagged when said blade is thrust through the element to be tagged causing the locking flanges to be cammed out of said slots as they are shortened due to the movement of said sliding element from said extended position to said retracted position.

4,195,636

ARM FLESH INJECTION SITE CLAMP

Robert C. Behnke, 1917 Michigan St., Oshkosh, Wis. 54901

Filed Mar. 27, 1978, Ser. No. 890,696
Int. Cl.[2] A61B 17/00
U.S. Cl. 128—346 **4 Claims**

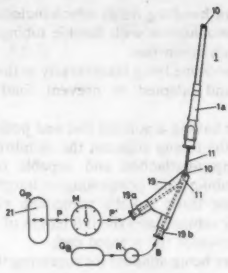
1. An injection site clamp comprising a pair of substantially semi-circular opposing jaws constructed of heavy gauge spring wire and disposed in closely spaced parallel planes, said jaws including first and second pairs of corresponding ends and being adapted to clampingly engage an arm portion therebetween, said first pair of corresponding ends terminating in a pair of generally parallel arm portions extending outwardly from said first ends in a direction extending away from said second ends, and spring means interconnecting the outer ends of said arms yieldingly biasing the ends of said arms from which said jaws are supported in directions to swing said jaws toward each other, said second pair of ends of said jaws including integral reversely curved and outwardly directed terminal ends adapted to lightly squeezably engage opposite remote side portions of a flesh injection site therebetween.

4,195,637

CATHETER ARRANGEMENT, METHOD OF CATHETERIZATION, AND METHOD OF MANUFACTURING A DILATATION ELEMENT

Andreas Grüntzig, and Hans Gleichner, both of Zürich, Switzerland, assignors to Schneider Medintag AG, Zürich, Switzerland

Filed Nov. 21, 1977, Ser. No. 853,190
Claims priority, application Switzerland, Oct. 21, 1977, 12835/77
Int. Cl.[2] A61M 25/00
U.S. Cl. 128—348 **17 Claims**



1. A catheter arrangement for opening or closing hollow cavities and the like, comprising:

a guide catheter;

a dilatation catheter co-operating with said guide catheter;

a dilatation element arranged at said dilatation catheter;

said dilatation element being structured to have two lumens;

one of said lumens being in flow communication with the exterior of the dilatation element for infeeding a liquid into the hollow cavity;

the other of said lumens serving for dilating said dilatation element;

said dilatation element having an at least partially cylindrical, pre-shaped foldable wall expansible to essentially a predetermined limited diameter and defining at least part of a boundary wall of said other lumen.

4,195,638

PACIFIER

Stuart S. Duckstein, 111 Tall Oaks Dr., Wayne, N.J. 07470

Filed Aug. 18, 1978, Ser. No. 934,673
Int. Cl.[2] A61J 17/00
U.S. Cl. 128—360 **1 Claim**

1. A pacifier comprised of:

a nipple and ring formed in a single piece;

a shield member intermediately disposed between the nipple and ring and retained captive by the material of the nipple and ring piece;

a centrally disposed hole in the shield;

an annular recess adjacent the centrally disposed hole; an array of holes; and

wherein the material of the nipple and ring piece extends through the array of holes and around the edge of the centrally disposed opening to retain the shield captive.

4,195,639

EXTERNAL BREAST PROSTHESIS

Denis C. Lee, 1120 Heatherway, Ann Arbor, Mich. 48104

Division of Ser. No. 836,533, Sep. 26, 1977, Pat. No. 4,125,117, which is a continuation-in-part of Ser. No. 769,115, Feb. 16, 1977, abandoned, which is a continuation of Ser. No. 664,234, Mar. 5, 1976, abandoned, which is a continuation-in-part of Ser. No. 605,031, Aug. 15, 1975, abandoned. This application Jul. 13, 1978, Ser. No. 924,139

Int. Cl.[2] A41C *3/10*; A61J *13/00*

U.S. Cl. 128—481 **2 Claims**

1. A nipple prosthesis comprising:

a thin convex generally circular overlay sheet of substantially uniform thickness throughout having a diameter approximating that of a normal areola and a curvature approximating that of a normal breast in the region of a normal nipple, said overlay having a convex shaped section in the central portion thereof simulating the shape of a normal nipple, said overlay being fabricated of silicone and cohering without adhesive to the convex front section of a silicone breast prosthesis in the region of a normal nipple and areola.

4,195,640

LOWER TORSO SUPPORT APPLIANCE

Ignatius F. Castiglia, 500 E. 77th St., New York, N.Y. 10021

Continuation-in-part of Ser. No. 757,153, Jan. 6, 1977, Pat. No. 4,108,149. This application Jul. 24, 1978, Ser. No. 926,374

The portion of the term of this patent subsequent to Aug. 22, 1995, has been disclaimed.

Int. Cl.[2] A41C *1/08*

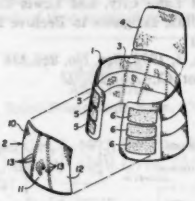
U.S. Cl. 128—579 R **11 Claims**

1. A lower torso support appliance, comprising:

a substantially elastic belt-like section having respective free end portions, said elastic section being adapted to extend across a rear body portion of a wearer, and to extend from an upper level in the vicinity of the upper part of the abdomen to a lower level in the vicinity of the lower part of the abdomen of a wearer;

a completely separable inelastic front panel having opposing end portions and dimensioned to overlie and bear against at least a major portion of the abdomen of a wearer; and

contact-type connecting means including contact-type engagement areas at said opposing end portions of said inelastic front panel and at the free end portions of said substantially elastic belt-like section for continuously, adjustably, and fixedly connecting each of said opposing end portions of said inelastic front panel to a respective free end portion of said substantially elastic belt-like section at a continuously variable plurality of positions relative to said free end portions with said end portions of said inelastic front panel always in overlying contact with their respective free end portion of said substantially elastic belt-like section to substantially prevent horizontal and



vertical relative movement therebetween at the contact areas so that said inelastic front panel is substantially symmetrically locatable relative to said substantially elastic belt-like section at a plurality of orientations with said inelastic front panel overlying and elastically biased against at least a major portion of the abdominal area of the body of a wearer and so that said appliance is continuously adjustable to different sizes and different orientations of said front panel to accommodate different size and shape abdominal areas and variations in size of the abdominal area.

4,195,641

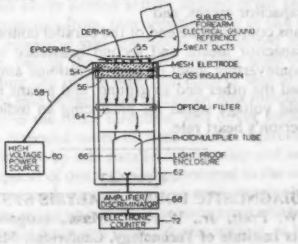
SPECTROSCOPIC ANALYSIS OF CHEMICAL SUBSTANCES

William T. Joines, 4010 Deepwood Cir., Durham, N.C. 27707; Larry W. Burton, 5315 Fairoaks Rd., Durham, N.C. 27712; Marc D. Rafal, 626 Pamlico St., Durham, N.C. 27701, and Alexander Spock, 515 Duluth St., Durham, N.C. 27705

Filed Dec. 15, 1977, Ser. No. 860,983

Int. Cl.[2] A61B *5/00*

U.S. Cl. 128—632 **11 Claims**



1. A method for carrying out a non-destructive, spectroscopic analysis of a chemical substance which comprises:

(a) positioning a test sample of the chemical substance to be analyzed between an insulated conductive electrode and a ground reference;

(b) stimulating the components of said chemical test sample to emit their characteristic optical spectra by establishing an electric field on and within said sample of at least 10^6 volts per meter with said electric field being generated by the application of an appropriate potential to said insulated electrode;

(c) filtering the optical spectra emitted from said test sample

to segregate for further processing those spectral emissions having a selective wavelength which identifies the chemical element of interest;

(d) detecting the emitted light energy at said selected wavelengths; and

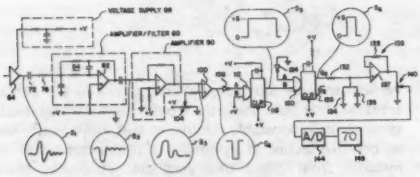
(e) determining the intensity of said detected light energy as a measure of the concentration of said chemical element in said chemical substance.

4,195,642

WEARABLE HEART RATE MONITOR

Edward G. Price, Salt Lake City, and Lewis C. Rasmussen, Bountiful, both of Utah, assignors to Beehive International, Salt Lake City, Utah

Filed Jan. 3, 1978, Ser. No. 866,334
Int. Cl.[2] A61B 5/02
U.S. Cl. 128—689 **2 Claims**



1. Pulse rate determination apparatus comprising

transducer means for producing a signal in response to the heartbeat of a person,

means for producing a pulse having a fixed width in response to each signal produced by said transducer means, and

tachometer circuit means for producing a voltage signal whose amplitude is proportional to the rate at which said pulses are produced, said tachometer circuit means including

operational amplifier means having an inverting input and noninverting input,

said noninverting input being coupled to said pulse producing means to receive pulses therefrom,

first resistance means coupling the output of said operational amplifier means to said inverting input,

capacitor means,

second resistance means connected in parallel with said capacitor means, and

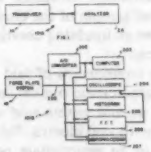
means coupling one end of the parallel connection of said capacitor means and second resistance means to the noninverting input of said operational amplifier means and the other end to ground, and means responsive to said voltage signal for producing an indication of the person's heart rate.

4,195,643

DIAGNOSTIC FORCE ANALYSIS SYSTEM

George W. Pratt, Jr., Wayland, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Dec. 27, 1976, Ser. No. 754,370
Int. Cl.[2] A61B 5/02
U.S. Cl. 128—779 **4 Claims**



1. A method of using diagnostic apparatus for measuring the relationship between distress level and physiological force due to pain developed by a live being, that comprises the steps of

providing a force plate system comprising at least one force plate to receive said physiological forces supporting at least some portion of a live being on said at least one force plate operable to produce an analog output signal comprising a dc component and an ac component;

providing analyzer means connected to said analog output signal distinguishing between the dc component and the ac component thereby to produce an output signal derived from the ac component that quantifies said distress level;

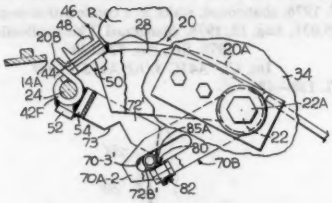
including the further step of preparing from the output signal a force amplitude hisogram over a predetermined time interval having a width indicating the level of distress due to pain.

4,195,644

STONE GUARD FOR HARVESTERS

William G. Ryczek, Kansas City, Mo., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Dec. 15, 1978, Ser. No. 969,943
Int. Cl.[2] A01F 12/16
U.S. Cl. 130—27 JT **10 Claims**



1. In a harvester of the type having a threshing mechanism comprising a rotatable threshing cylinder and a concave lying contiguous and radially outwardly of said cylinder whereby grain is threshed from a crop passing between said cylinder and said concave, and a feeder means carried by said harvester and adapted to feed a crop to be threshed to the interspace between said cylinder and said concave, in which the improvement is characterized by a stone guard door interposed in the crop flow path between said feeder means and said interspace and adapted to discharge a stone or the like before it reaches said interspace, whereby to prevent damage by said stone to said threshing mechanism, said stone guard door comprising a main body portion pivotally connected contiguous its forward edge to stationary harvester structure contiguous the discharge end of said feeder means, a lip portion hingedly connected contiguous its forward edge to the rearward edge of said main body portion, detent means carried by said stone guard door for normally maintaining said lip portion rigid with respect to said main body portion, said lip portion normally resting on the edge of said concave when said detent means is engaged, whereby to maintain said stone guard door in a closed position in which it serves as a path for crop moving from said feeder means to said interspace, said detent means being adapted to be released by the force or impact of a stone or the like on said stone guard door, release of said detent means being effective to permit said lip portion to pivotally move about said its hinged connection to said main body portion to an open unlatched position in which said lip portion drops off said edge of said concave to permit said stone guard door to drop down by gravity about the pivotal connection of said main body portion to the harvester structure to discharge said stone or the like before it reaches said interspace.

4,195,645
TOBACCO-SUBSTITUTE SMOKING MATERIAL

Hubert Bradley, Jr., Matthews, N.C.; Robert G. Bayless, Yellow Springs, Ohio; Ronald L. Hart, Xenia, Ohio, and Danny A. Davis, Casstown, Ohio, assignors to Celanese Corporation, New York, N.Y.

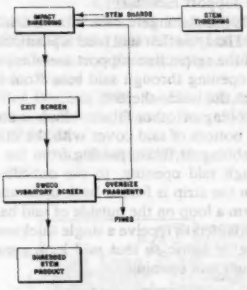
Filed Mar. 13, 1978, Ser. No. 885,915
Int. Cl.[2] A24B 3/14; A24D 1/18
U.S. Cl. 131—2 36 Claims

1. A smoking material comprising a polysaccharide as a combustible organic ingredient and a plurality of combustible microcapsules including a capsule core material which is a water-soluble derivative of a tobacco alkaloidal material, which derivative is an addition salt of the tobacco alkaloid with a physiologically acceptable acid wherein said capsule core material also includes an amount of the same acid in free form as is present in the acid addition salt, the core material being encapsulated in a sheath of a combustible, film-forming, water-impermeable, polymeric wall material.

4,195,646
PROCESS FOR SHREDDING TOBACCO STEMS

George F. Kite, Richmond, Va., assignor to Philip Morris Incorporated, New York, N.Y.

Filed May 17, 1977, Ser. No. 797,705
Int. Cl.[2] A24B 3/00, 5/00
U.S. Cl. 131—140 R 5 Claims



1. A method of shredding tobacco stems by splitting or parting the stems lengthwise along the grain thereof to produce light, pliable, low bulk density fibrillar shreds which comprises the steps of:

a. having tobacco sten shards supported by a fluid medium which defines a shredding zone; and

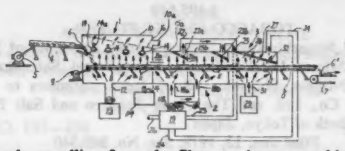
b. striking said stem shards with a blunt instrument, while so supported, with sufficient force to separate said stem shards into fibrilliform shred fragments.

4,195,647
METHOD AND APPARATUS FOR INCREASING THE VOLUME OF TOBACCO OR THE LIKE

Waldemar Wochnowski, Hamburg, and Willi Thiele, Geesthacht, both of Fed. Rep. of Germany, assignors to Hauni-Werke Korber & Co. KG., Hamburg, Fed. Rep. of Germany

Filed Aug. 24, 1978, Ser. No. 936,203
Claims priority, application United Kingdom, Sep. 3, 1977, 37040/77
Int. Cl.[2] A24B 3/18
U.S. Cl. 131—140 P 38 Claims

1. A method of increasing the filling capacity of fibers which consist of smokable material, particularly tobacco, prior to confinement of fibers in containers, such as wrappers of cigarettes, comprising the steps of raising the moisture content of and simultaneously heating the fibers to thus increase the pliability of fibers; and thereupon drying the fibers including

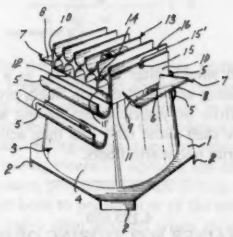


alternately expelling from the fibers moisture at a higher and lower rate per unit of time in rapid sequence.

4,195,648
ASHTRAY

Armand Joncas, Saint-François-de-Salle, Cte Roberval, Canada G0W 1M0

Filed Oct. 5, 1977, Ser. No. 839,732
Int. Cl.[2] A24F 13/18, 19/14
U.S. Cl. 131—237 2 Claims



1. An ashtray comprising a generally box-shaped container serving as a receptacle for extinguished cigarette butts, said container having a top portion forming four side walls defining at their top edges a square or rectangular top opening, said top edges including a first pair of substantially parallel top edges and a second pair of substantially parallel top edges perpendicular to, and at a higher level, than the top edges of the first pair, each top edge of the second pair having a notch located centrally thereof, a square or rectangular cover for closing said top opening, said cover having axially aligned pivot pins secured to, and projecting from, two opposite sides of said cover and removably engaging said notches, a tab secured to, and projecting from, one of the other two opposite sides of said cover and abutting one or the other top edge of said first pair upon pivoting of said cover about said pivot pins through half a turn in one or in the other direction, said cover formed by two oppositely disposed series of semi-tubular cigarette supports disposed in side-by-side parallel relationship and secured together, the support of one series being secured to the support of the other series, each support having a semi-circular bottom and straight sides rising up in parallel spaced-apart relationship and in full diameter from said semi-circular bottom, at least as high as the cigarette placed in said support, the supports of one series opening at one main face of said cover and the supports of the other series opening at the opposite main face of said cover, said cover being held in a used position with one or the other series of said supports facing upwardly and with the cover closing said opening by frictional engagement of the sides of said cover provided with said pivot pins with the side walls of said container having said notches and by said tab abutting against one top edge of said first pair, said cover being removable from said container by the simple disengagement of the two pivot pins from their respective notches, flipping of said cover through half a turn causing emptying of the extinguished cigarette butts placed in the upwardly facing supports into the interior of said container and bringing the other series

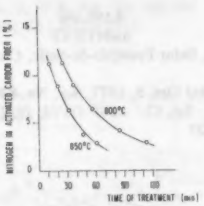
of supports to an upwardly facing position ready to receive additional cigarette butts.

4,195,649

TOBACCO SMOKE FILTER

Katsuichi Noguchi; Kazuo Maeda; Yuriko Anzai, all of Yokohama; Minoru Hirai, Shizuoka; Kazuo Izumi, Shizuoka, and Kenji Niijima, Shizuoka, all of Japan, assignors to Toho Beslon Co., Ltd. and The Japan Tobacco and Salt Public Corp., both of Tokyo, Japan

Filed Jan. 13, 1978, Ser. No. 869,340
Claims priority, application Japan, Jan. 13, 1977, 52-1866
Int. Cl.[2] A24B *15/02*
U.S. Cl. 131—261 R 20 Claims



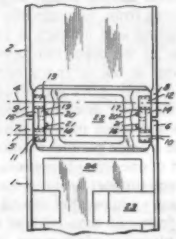
1. A tobacco smoke filter containing, as a filter element, nitrogen-containing activated carbon fibers produced by oxidizing acrylonitrile polymeric fibers having an acrylonitrile content of more than about 60% and then activating the oxidized acrylonitrile polymeric fibers.

4,195,650

CONTAINER FOR STORING OBJECTS

Roland Ullmann, Hausen; Otto Schweingruber, Glashütten, and Klaus Oprach, Schwalbach, all of Fed. Rep. of Germany, assignors to Braun Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 838,590, Oct. 3, 1977, abandoned, which is a continuation of Ser. No. 696,295, Jun. 15, 1976, abandoned. This application May 2, 1978, Ser. No. 902,265
Claims priority, application Fed. Rep. of Germany, Aug. 25, 1975, 2537730
Int. Cl.[2] A45D *33/00*
U.S. Cl. 132—83 R 5 Claims



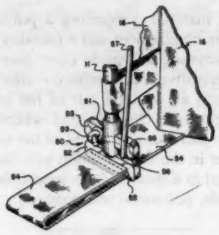
1. An openable container comprising a pair of mating container sections each having two lateral sides; two pairs of first gears secured, respectively, to opposite end portions of said lateral sides to define a separate rotation axis for each section; a hinge member arranged between said end portions and surrounding said pairs of first gears; and two pairs of meshing second gears supported for rotation on said hinge member between said pairs of first gears, each of said second gears engaging an assigned first gear to support respective container sections for rotation about 360° about said separate axes.

4,195,651

GROUND ENGAGING FOOT MEMBER

Paul J. Watts, Sandy; Lynn D. Crawford, and Philip T. Nichols, both of Salt Lake City, all of Utah, assignors to American Ecosystems, Inc., Salt Lake City, Utah

Filed Oct. 10, 1978, Ser. No. 950,258
Int. Cl.[2] A45F *1/04, 1/18*
U.S. Cl. 135—2 8 Claims



1. In a collapsible shelter wherein the shelter includes a foldable frame and a cover of sheet material affixed to the frame, with said frame comprising a plurality of support members for supporting said cover when said frame is erected, the improvement comprising foot members attached to the ground engaging ends, respectively, of said support members, each of said foot members including:

a central body which is attached to said other end of a respective support member;

a substantially flat, elongate base attached intermediate its ends to said body so that said base is positioned adjacent to the end of the respective support member;

an elongate opening through said base from the outside of said base to the inside thereof; and

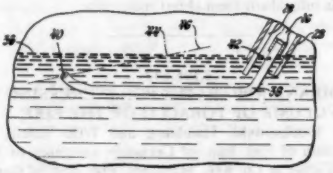
a strip of webbing or other fabric which is attached at one end to the bottom of said cover with the other end of the strip of webbing or fabric passing from the inside of said base through said opening, to the outside of said base, whereupon the strip is folded back upon and attached to itself to form a loop on the outside of said base, said opening being adapted to receive a single thickness of said strip of webbing or fabric so that said loop cannot be pulled back through said opening.

4,195,652

LIQUID LEVEL CONTROL FOR A TRANSMISSION SUMP

Lyle B. Smith, Westland, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 3, 1978, Ser. No. 893,470
Int. Cl.[2] B67D *3/00*
U.S. Cl. 137—43 1 Claim



1. A transmission liquid level control comprising;

a transmission sump having a desired liquid level during operation; an external storage reservoir means for storing excess liquid; a source of subatmospheric pressure connected with said external reservoir and imposing a subatmospheric pressure thereon during transmission operation; passage means interconnecting said transmission

sump and said external reservoir including a level control passage extending from a terminus at the desired liquid level in the transmission sump to a terminus above the liquid level in said external reservoir for imposing a subatmospheric pressure on said passage to enforce the transfer of liquid from said transmission sump to said external reservoir when the liquid level in said transmission sump is above the desired level, a return passage connected between said external reservoir and said transmission sump at a position below both the liquid level in said external reservoir and the desired level in said transmission sump to permit the flow of liquid from said external reservoir to said transmission sump when the liquid level in said transmission sump is below the desired level, and air passage means surrounding said level control passage and said return passage for connecting said level control passage with atmospheric air when the liquid level in said transmission sump is below said desired level; an equalizer tube extending from the terminum of said level control at the desired liquid level to a position spaced therefrom having an open end at the spaced position below the desired liquid level and an aperture in said equalizer tube at the terminus of said level control to communicate said desired level to said level control passage; and flow restriction means disposed between said source of subatmospheric pressure and said external reservoir to limit the rate of air withdrawal from said external reservoir.

4,195,653

METHOD AND APPARATUS FOR RECOVERING PRODUCTS OF LOW PUMPABILITY

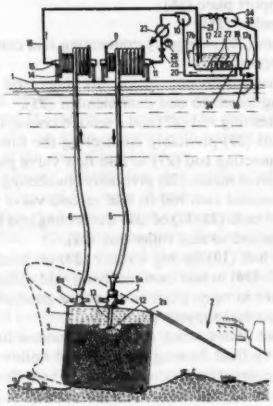
Maurice Cessou, Communay, France, assignor to Institut Francais du Petrole, France

Filed Dec. 12, 1977, Ser. No. 859,590

Claims priority, application France, Dec. 13, 1976, 76 37849; Feb. 17, 1977, 77 04584

Int. Cl.² B63B *27/24*

U.S. Cl. 137—206 **15 Claims**



1. An apparatus for withdrawing from a tank a product difficult to pump, comprising at least one drain pipe for the product, equipped with means for connection to the tank, and means for feeding the tank with hot water, wherein said feeding means comprise in combination at least one injection device comprising at least one nozzle for creating at least one striking and stirring hot water jet, this injection device being adapted for connection to the upper part of the tank and being connected with at least one hot water injection pipe, and at least one secondary injection device located in said outlet pipe and oriented in the direction of discharge of the product, this secondary injection device opening in the tank above the level of said nozzle creating said striking and stirring jet.

4,195,654

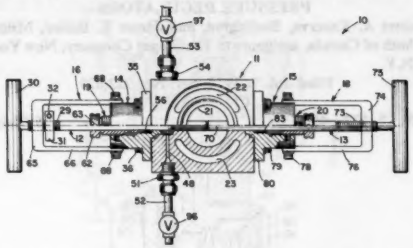
ADDITIVE INJECTION VALVE

Ralph J. Coley, Richmond, Va., assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed May 11, 1978, Ser. No. 905,076

Int. Cl.² F16K *19/00*

U.S. Cl. 137—238 **12 Claims**



1. A valve for the introduction of an additive to a main process stream lumen provided therein comprising, a valve body embodying the lumen, seating means in said valve body having a bore communicable with the lumen, a first valve stem in said bore in said seating means, a second valve stem movable relative to said seating means for opening and closing said bore in said seating means, port means in said seating means communicable with said bore to permit flow of the additive into said bore, said first valve stem adapted when reciprocated selectively to open and close said port means, means for moving said first valve stem whereby the additive flows through said port means into said bore, and means for moving said second valve stem for selectively opening said bore to inject the additive into the lumen.

4,195,655

VALVE FOR REGULATING THE FLOW OF HOT FLUIDS

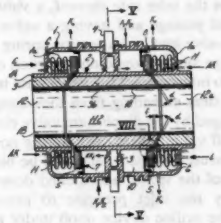
Rolf Augsburger; Horst Kuppka, and Helmut Zilling, all of Nüremburg, Fed. Rep. of Germany, assignors to Klein, Schanzlin, & Becker Aktiengesellschaft, Frankenthal, Fed. Rep. of Germany

Filed Jul. 27, 1977, Ser. No. 819,295

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1976, 2633809

Int. Cl.² F16K *49/00, 25/00;* G21D *1/02*

U.S. Cl. 137—340 **11 Claims**



1. A valve, particularly for controlling the flow of hot fluids in nuclear reactor plants or the like, comprising a valve body defining a passage for the flow of hot fluid and including heat-insulating means surrounding said passage; a valving element installed in said body and movable between a plurality of positions including an open and a closed position; at least

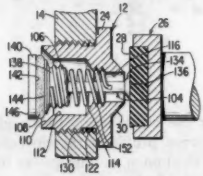
one annular seat installed in said body and movable therein into and from sealing engagement with said element; and means for moving said seat with respect to said body, said body and said element defining a cooling chamber for said seat and said body having inlet means for admission of fluid coolant into said chamber, said element and said insulating means defining a clearance for the flow of coolant from said chamber into said passage.

4,195,656

ORIFICE DEVICE WITH SAFETY SHUT-OFF FOR PRESSURE REGULATORS

Robert A. Kanerva, Burlington, and James E. Bailey, Milton, both of Canada, assignors to The Singer Company, New York, N.Y.

Filed Jul. 7, 1978, Ser. No. 922,629
Int. Cl.[2] F16K 17/00
U.S. Cl. 137—458 6 Claims



1. A pressure regulator operative in responsive to inlet pressure and outlet pressure comprising;

a. a housing having an inlet, an outlet, a transverse wall therebetween, and a chamber formed on the outlet side,

b. an orifice device connected in the transverse wall and including a shut-off valve on the inlet side and a valve seat on the outlet side,

c. a flexible diaphragm having one side in communication with the outlet connected in the chamber,

d. a diaphragm valve element operatively actuated by the diaphragm to be shifted a predetermined distance toward and away from the valve seat responsive to the pressure in the chamber, and

e. the valve element, during normal operation of the pressure regulator, to engage and to hold open the shut-off valve whereby upon under pressure in the outlet chamber or excessive flow through the orifice device causes the shut-off valve to be actuated to close the orifice device and to prevent any flow therethrough,

the orifice device including a body having a passage therethrough and the valve seat formed on the outlet side thereof,

the shut-off valve including the body having a valve seat formed on the inlet side thereof, a valve stem located within said passage and having a valve head coacting with the valve seat and a tension spring located within said passage and surrounding a portion of the length of the stem to interconnect the valve stem to the body, and the valve stem extending from the passage in the body to be engaged by the diaphragm valve element whereby the shut-off valve is held open during normal operation of the pressure regulator, and will be biased closed by the force of the spring and locked down by the force exerted by the inlet pressure to prevent any flow through the orifice device upon under pressure in the outlet chamber or excessive flow through the orifice.

said passage being counterbored with the smaller diameter portion adjacent the diaphram valve seat

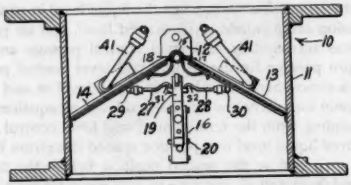
said spring is a coil spring having one end connected to the valve stem adjacent said valve head and the other end secured to the small diameter portion whereby the spring will normally be placed in tension by the force of the diaphram valve element shifting the valve stem to hold the shut-off valve open.

4,195,657

SURGE PROTECTION VALVE

William A. Pysh, Erie, Pa., assignor to Techno Corporation, Erie, Pa.

Filed Feb. 23, 1979, Ser. No. 14,719
Int. Cl.[2] F16K 17/00
U.S. Cl. 137—460 9 Claims



1. A valve (10) having a hollow cylindrical body (11),

a central support (12) extending diametrically across said valve body and fixed thereto at its ends,

two valve plates (13, 14),

sealing means (15) swingably supporting said valve plates on said support to swing into engagement with the inner periphery of said cylindrical body closing the passage through said body and swingable toward each other to open position,

support plate (16),

said support plate extending diametrically across said hollow cylindrical body generally parallel to said central support,

the ends (17, 18) of said support plate being fixed to the inner periphery of said cylindrical body,

a roller arm (19),

pivot means (20) swingably attaching said roller arm (19) to said support plate (16),

a cam member (21),

pivot means (20) swingably connecting said cam member to said support plate,

slidable means (25) connecting the inner end (26) of said adjusting means to said cam member (21),

a first connecting rod (27) and a second connecting rod (28),

pivot means (29) pivotably connecting the first end of said first connecting rod (27) to said first valve plate (13), and second pivot means (30) pivotably connecting the first end of said second cam rod to said second valve plate (14),

said second ends (31, 32) of said connecting rod being swingably attached to said roller link (19),

said roller link (19) having a roller (33) on its distal end,

and a notch (34) in said cam receiving said roller, when said valves are in open position disposed generally in planes parallel to said support plate (16),

said support plates being adapted to have a force exerted thereon by fluid flowing through said hollow cylindrical body in proportion to the velocity of said flow, whereby said plates exert a force on said roller link urging said roller link to pull said roller out of said notch allowing said valve plates (13, 14) to swing to closed position.

4,195,658

RESETTABLE SAFETY VALVE

Jorge Dierksmeier, 325 NW. 187 St., Miami, Fla. 33169, and Joseph J. Pasint, 3781 SW. 32 Ct., Hollywood, Fla. 33023

Filed Nov. 15, 1978, Ser. No. 960,837
Int. Cl.[2] F16K 17/00
U.S. Cl. 137—462 5 Claims

1. An improved resettable safety valve for preventing the

escape of gas from a closed system wherein an inlet line and an outlet line are connected to the valve, the valve comprising:

a piston-like plug including a head at one end and a rod-like body at the other end,

a housing having

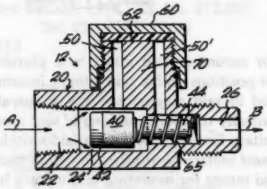
an inlet chamber, sized such that the plug can enter the inlet chamber,

a main chamber adjacent the inlet chamber and along the same axis as the inlet chamber,

an outlet chamber adjacent the main chamber and along the same axis as the main chamber sized to accept the rod-like end of the plug thereby preventing the flow of gas through the outlet chamber when the rod-like body is within the outlet chamber, and

two stack-like chambers perpendicular the main chamber with a septum adjacent each chamber and separating the chambers thereby, and each chamber having a first end with an opening into the main chamber and a second open end,

a cap in normal abutting relation to the second openings of the two stack-like chambers and movable thereto, thereby preventing the flow of gas out of each of the openings unless the cap is slightly raised above the opening, in which event gas will be permitted to flow from one stack second opening to the other,



the housing including means for securing the cap to the housing and the means for securing the cap to the housing allowing the cap to be movable with respect to the second opening of the stack-like chambers.

a spring abutment shouldering that portion of the outlet chamber adjacent the main chamber,

a spring within the housing abutting the spring abutment and being within the main chamber, the spring's diameter being sized to accept the rod-like end of the plug through the spring, the plug within the chamber with the rod-like end through the spring and the spring normally urging the plug head toward the inlet chamber thereby gas entering the inlet chamber may flow through the inlet chamber through the main chamber through the outlet chamber into the outlet line, however, should a break in the line occur a low pressure area will be created causing the plug to move against the spring with a predetermined force such that the rod-like end of the plug will close off the outlet chamber and no gas will be permitted through the outlet chamber, when the break is repaired, the cap may be moved above its abutting relation to the second opening of the stack-like chambers thereby causing the pressure to become equalized thus allowing the spring to normally urge the plug away from the outlet chamber thereby allowing gas to pass through the valve, and the cap may be returned to its normal abutting position on the second opening of the stack-like chambers.

4,195,659

TENSION CONTROL FOR A VALVE

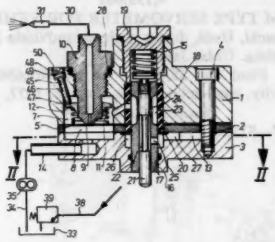
Rainer Barthelmes, and Heinrich Räthel, both of Bamberg, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 28, 1977, Ser. No. 820,065

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1976, 7629406[U]

Int. Cl.[2] F02M *39/00*; G05D *7/01*

U.S. Cl. 137—501 **3 Claims**



1. In a diaphragm valve having a housing including: means defining a chamber; a flexible diaphragm forming a movable part of the valve, said diaphragm being clamped by the chamber defining means so as to extend across the chamber and divide same into two chambers through which pressurized liquid flows; means defining a valve seat, said valve seat being positioned in one of the chambers in operative proximity to the diaphragm, the improvement comprising:

(a) an apertured plate means including a chamfered portion slidably disposed relative to said valve seat and supported by resilient means positioned between said plate means and said diaphragm; and

(b) means mounted exteriorly of said valve housing directly engageable with said plate means to apply tension to said resilient means, said means mounted exteriorly of said housing projecting into said one chamber at an angle relative to said valve seat and including an adjusting element which enters said housing at an angle that corresponds to said chamfered portion.

4,195,660

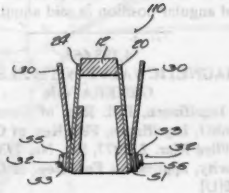
REED VALVE

Dale L. Taipale, Libertyville, and Richard A. Wiezien, Antioch, both of Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Continuation-in-part of Ser. No. 673,524, Apr. 5, 1976, abandoned. This application Mar. 30, 1978, Ser. No. 891,820

Int. Cl.[2] F16K *15/14*

U.S. Cl. 137—512.1 **2 Claims**



1. A reed valve comprising a reed plate including first and second faces having respective means therein defining respective first and second ports, respective seats extending respectively along the periphery of each of said ports, a first reed member including a first port closing portion, a second reed

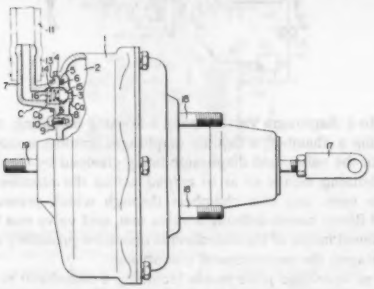
member including a second port closing portion, first means mounting said first reed member on said first face of said reed plate for movement of said first port closing portion relative to said first port, second means mounting said second reed member on said second face of said reed plate for movement of said second port closing portion relative to said second port, one of said first and second mounting means including shim means for causing the associated one of said reed members to operate at a frequency different from the frequency of the other of said reed members.

4,195,661

VACUUM TYPE SERVOMETER FOR VEHICLE USE

Hiroo Takeuchi, Ueda, Japan, assignor to Nissin Kogyo Kabushikia Kaisha, Ueda, Japan

Filed May 25, 1978, Ser. No. 909,656
Claims priority, application Japan, Jun. 30, 1977, 52-86708
Int. Cl.[2] F16K *15/04*
U.S. Cl. 137—515.5 **2 Claims**



1. In a vacuum type servomotor for vehicle use including a booster shell defining therein a vacuum chamber, a valve casing formed of first and second halves, the first half being formed integral with the adjoining wall of said booster shell and having a valve port formed in communication with said vacuum chamber, the second half of said valve casing being detachably joined to said first valve casing half to define a valve chamber together therewith, a nonreturn valve element arranged in said valve chamber for seating engagement with said valve port, and a valve-closing spring disposed in said valve chamber normally to bias said nonreturn valve element in a direction for seating engagement with said valve port, the improvement comprising: an L-shaped connector pipe integrally formed with said second casing half for connection with a vacuum inlet line leading from a vacuum source, an annular recess formed in the outer end face of said first valve casing half in surrounding relation to said valve chamber, an annular mounting flange integrally formed with said second valve casing half at the inner end thereof and rotatably fittted in said annular recess, and a presser plate detachably secured to the adjoining wall of said booster shell to fix said mounting flange in any desired angular position in said annular recess.

4,195,662

ELECTROMAGNETIC VALVE WITH ELECTRIC SIGNAL GENERATOR

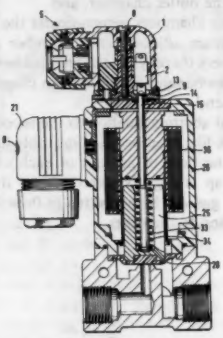
Otto Gottel, Ingelfingen, Fed. Rep. of Germany, assignor to Burkert GmbH, Ingelfingen, Fed. Rep. of Germany

Filed Mar. 2, 1977, Ser. No. 773,455
Claims priority, application Fed. Rep. of Germany, Mar. 3, 1976, 7606375[U]
Int. Cl.[2] F16K *37/00*
U.S. Cl. 137—554 **4 Claims**

1. In an electromagnetic valve assembly which includes a valve mechanism and a valve housing, an electromagnetic actuating mechanism for actuating a movable closure member of said valve mechanism, said electromagnetic actuating mechanism including an armature movable between two terminal positions and urged in one terminal position by a return spring and being contained in a magnet housing, said assembly further including signal generator means for providing signals indicative of the positions of said movable closure member and of said armature, the improvement comprising:

said signal generator means includes a microswitch having a switch-closing member the closure motion of which is resisted by elastic means and a removable insert on which said microswitch is affixed;

a unitary housing having an interior in which said signal generator means is disposed having an opening, means for detachably mounting said unitary housing on said magnet housing in one of a plurality of selected positions;



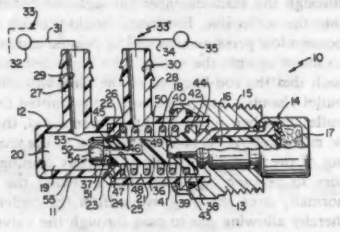
means for mounting said insert in a plurality of selected annular positions within said unitary housing; and there is disposed in said magnet housing a movable pin which mechanically transmits motions of said armature through said unitary housing opening to said switch-closing member in said unitary housing mounted on said magnet housing; said means for mounting said unitary housing on said magnet housing including a bracket having an opening and a sealing member disposed adjacent said opening and means on said bracket for mounting said bracket on said unitary housing and said magnet housing with said openings in said housings in aligned relationship for accommodating said pin therethrough.

4,195,663

CONDITION RESPONSIVE VALVE CONSTRUCTION AND METHOD OF MAKING THE SAME AND SYSTEM THEREFOR

Everett T. Steele, Jr., Knoxville, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 808,875, Jun. 22, 1977, Pat. No. 4,147,180.
This application Jan. 11, 1979, Ser. No. 2,715
Int. Cl.[2] F16K *15/18*
U.S. Cl. 137—599.2 **4 Claims**



1. In a condition responsive valve construction having valve

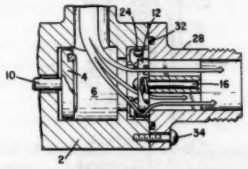
seat means disposed between a pair of ports to interconnect the same together and having valve member means for opening and closing said valve seat means in response to a condition sensed thereby, said valve member means having a by-pass passage means for fluidly interconnecting said ports together even though said valve seat means is closed by said valve member means, said by-pass passage means having check valve means therein to permit fluid flow through said by-pass passage means in only one direction, the improvement wherein said valve member comprises a plunger having a free end interrupted by said by-pass passage means and carrying said check valve means to control said by-pass passage means at said free end of said plunger, said plunger having a cage-like part extending beyond said free end thereof, said check valve means including a ball valve member disposed in said cage-like part to open and close said by-pass passage means at said free end of said plunger.

4,195,664

SURGE-DAMPING VACUUM VALVE

Jack C. Bullock, Pleasanton, and Benjamin E. Kelly, Tracy, both of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 25, 1978, Ser. No. 872,285
Int. Cl.[2] F16K *17/30*
U.S. Cl. 137—613 **4 Claims**



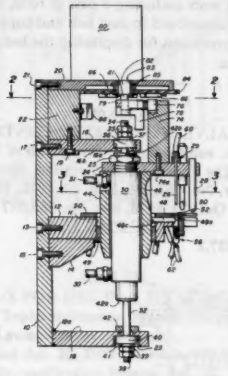
1. A vacuum control valve having a valve body defining a chamber therein and provided with a pair of ports connected to said chamber, means including a movable member positioned in said chamber for controlling flow through said chamber, and a surge-damping mechanism positioned in said chamber in spaced relationship with respect to said movable member, said surge-damping mechanism comprising: a collar positioned in one of the ports of said valve body and having a plurality of inwardly extending tab members, a disk movably poistioned in said collar and having a radially extending body portion and a flange about the periphery of said body portion and extending substantially perpendicular thereto, said flange of said disk having a plurality of slots around the periphery thereof, said disk being connected to one end of a shaft, said shaft being supported in a spider mounted within a fitting connected to said valve body and adapted to be connected to an associated vacuum pump, said fitting having a surface forming a seat for said flange of said disk, and spring means positioned between said spider and said disk whereby differential pressure across said disk caused by a flow surge condition forces said disk against said spring such that said flange contacts said seat thereby restricting flow through said one port except through said slots in said disk which damps out the flow surge, and upon pressure equalization across said disk said spring forces said disk to move within said collar into contact with said tab members of said collar allowing unrestricted flow through said one port.

4,195,665

FLUID VALVE

Gaillard R. Nolan, Acton, and William E. Flynn, Chelmsford, both of Mass., assignors to Instrumentation Laboratory, Inc., Lexington, Mass.

Filed Feb. 24, 1978, Ser. No. 881,000
Int. Cl.[2] C01N *1/10*
U.S. Cl. 137—624.18 **33 Claims**



1. Fluid valve comprising

a support structure rotatably supporting a single inlet means comprising a hollow blunt needle having a rounded closed end and being provided with an exit port formed substantially normal to the axis of said needle, and stationarily supporting a plurality of outlets,

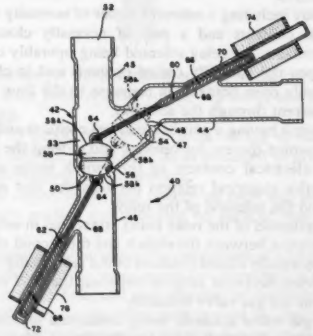
means for effecting communication between said single inlet means and one of said outlets, in which each of said plurality of outlets comprises an entrance portion and a pair of leg portions and in which said communication is effected by said exit port and only one of said pair of leg portions.

4,195,666

QUARTZ BALL VALVE

Robert A. Frosch, Administrator of the National Aeronautics and Space Adminstration, with respect to the invention of; Carl Goetz, and William M. Ingle, both of Phoeniz, Ariz.

Filed Aug. 31, 1978, Ser. No. 938,300
Int. Cl.[2] F16K *31/06*
U.S. Cl. 137—625.4 **3 Claims**



1. A selectively actuatable ball valve comprising:

A. a valve housing formed of refractory material having means defining therein a fluid inlet port, a fluid outlet port,

and a pair of mutually spaced, adjacently related socket seats disposed in communicating relation with the fluid inlet port and the fluid outlet port;

B. a ball formed of refractory material configured to be received in and discharged from each of said socket seats for alternately opening and closing said inlet port and said outlet port; and

C. valve actuator means for displacing said ball relative to said socket seats including a pair of rods, each rod of said pair being connected to said ball and supported for rectilinear reciprocation for displacing the ball relative to said socket seats.

4,195,667

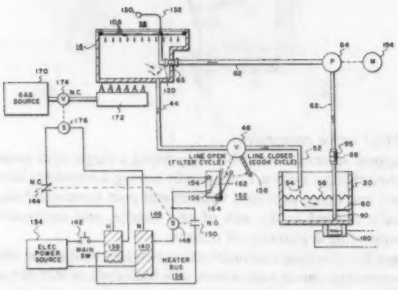
SOLENOID VALVE WITH SAFETY CONTROL CIRCUIT

L. Frank Moore, and George M. Price, both of Shreveport, La., assignors to The Frymaster Corporation, Shreveport, La.

Division of Ser. No. 753,936, Dec. 23, 1976. This application Oct. 20, 1978, Ser. No. 953,077

Int. Cl.[2] F16K *51/00*

U.S. Cl. 137—637.1 **1 Claim**



1. A system for controlling the flow of gas from a gas source to a gas burner, the system comprising, in combination:

a normally closed gas valve having an electrical solenoid assembly connected to open the valve in response to the flow of electrical current through the solenoid;

a first electrical bus for conducting electrical current;

an on-off switch connected to permit manual control of the conduction of electrical current from the power source to the first electrical bus;

a second electrical bus for returning electrical current conducted through the first electrical bus to the power source;

a relay including a solenoid, a pair of normally open electrical contacts and a pair of normally closed electrical contacts, the relay solenoid being operably connected to open the normally closed contacts and to close the normally open contacts in response to the flow of electrical current through the solenoid;

a switch having a pair of electrical contacts and an actuator coupled thereto for opening and closing the contacts;

the electrical contacts of the switch being connected in series electrical relation between the first electrical bus and the solenoid of the relay;

the solenoid of the relay being connected in series electrical relation between the switch and the second electrical bus;

the normally closed contacts of the relay being connected in series electrical relation between the first electrical bus and the gas valve solenoid;

the gas valve solenoid being connected in series electrical relation between the normally closed relay contacts and the second electrical bus; and,

the normally open contacts of the relay being electrically connected in parallel circuit relation with the electrical contacts of the switch.

4,195,668

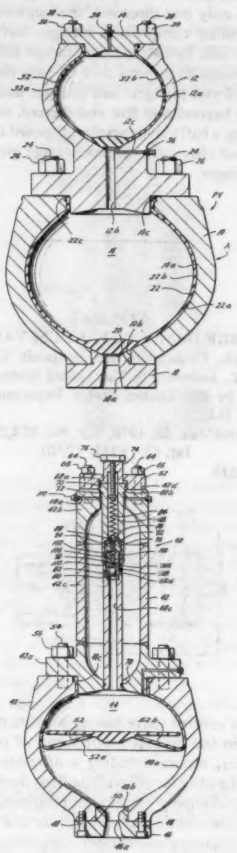
HIGH CAPACITY PULSATION DAMPENER OR SURGE ABSORBER

George E. Lewis, Arcadia, Calif., assignor to Hydril Company, Los Angeles, Calif.

Filed Jan. 18, 1979, Ser. No. 2,111

Int. Cl.[2] F16L *55/04*

U.S. Cl. 138—30 **17 Claims**



1. A pulsation dampener for dampening undesired pressure surges in a fluid, including:

a pressure vessel formed a cavity means for receiving and containing fluid under pressure in said cavity means, said pressure vessel having a first opening providing a flow passage for permitting ingress and egress of fluid subject to the undesired pressure surges from said cavity means through said flow passage;

a flexible diaphragm disposed in said cavity for dividing said cavity means into a first zone for receiving a first fluid and a second zone for receiving a second fluid, said first zone communicating with said flow passage;

means operably mounted with said pressure vessel for providing a preselected fluid pressure charge of compressible fluid into said second zone for dampening the pressure surges in said first zone; and

a third zone formed in said cavity, said third zone having a compressible fluid of a preselected fluid pressure greater than the preselected fluid pressure in the second zone, said

third zone operably connected with said second zone for dampening the fluid subject to the undesired pressure surges in the first zone as the fluid subject to the undesired pressure surges increases in pressure to the greater preselected fluid pressure in the third zone wherein additional dampening volume of compressible fluid is provided by the third zone at the greater preselected fluid pressure.

4,195,669

METHOD OF ARRESTING CRACK PROPAGATION IN LINE PIPE CHARACTERIZED BY DUCTILE FRACTURE

Kenneth D. Ives, Franklin Township, Westmoreland County; Raymond F. McCartney, Plum Borough, and Alan K. Shoemaker, Monroeville Borough, all of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Jan. 12, 1976, Ser. No. 648,090
Int. Cl.[2] F16L *35/00, 57/00*
U.S. Cl. 138—178 **3 Claims**

1. A method of arresting ductile fracture and mixed mode crack propagation in a steel line pipe containing gas at superatmospheric pressures, wherein the fracture is propagated by the outward acceleration of pipe flaps behind the crack tip, the method comprising adding a close fitting untensioned annular body completely encircling the pipe such that when a crack tip advances therepast, the annular body constrains the pipe flaps thereby suitable preventing the outward acceleration thereof to a value insufficient to provide the necessary driving force to propagate the crack tip further.

4,195,670

REVERSIBLE BEATER REED FOR A WEAVING LOOM

Robert P. Orr; Joan B. Orr, and Thomas P. Orr, all of 104 Main St., Tiburon, Calif. 94920

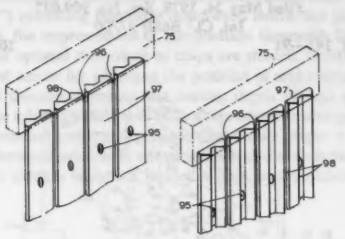
Division of Ser. No. 884,165, Mar. 7, 1978, abandoned. This application Feb. 26, 1979, Ser. No. 15,128
Int. Cl.[2] D03D *49/68*
U.S. Cl. 139—192 **1 Claim**

1. A reversible beater reed for a weaving loom, including in combination:

a frame having stub shafts projecting outwardly therefrom at the upper end, and

a series of spaced-apart bars supported by said frame to provide slots therebetween, each bar having a central opening therethrough,

one side of said reed having flat coplanar bar surfaces, the other side having each bar provided with a vertically



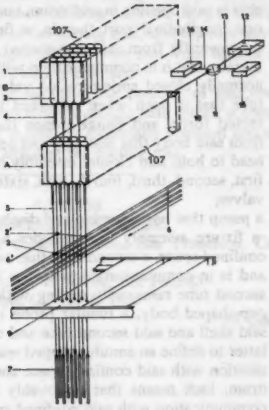
extending wedge portion between each slot and each hole, for a different kind of beating.

4,195,671

APPARATUS FOR USE IN A WEAVING PROCESS

Achille Bossut, Tupin-et-Semons, France, assignor to J. Brochier Soieries, Lyons, France

Filed Jul. 25, 1978, Ser. No. 928,115
Claims priority, application France, Jul. 26, 1977, 77 23840; Oct. 25, 1977, 77 33096; Oct. 25, 1977, 77 33097
Int. Cl.[2] D03C *3/20*
U.S. Cl. 139—455 **10 Claims**



1. An apparatus for the individual control of the raising and lowering of warp yarns of a fabric weaving loom, said apparatus comprising:

a plurality of jacks, each of said jacks having at least one cylinder and one piston, said jacks arranged in groups as units with respect to one another;

piston rods connected to said pistons on each said jacks;

a warp yarn guiding eye mounted on each of said piston rods;

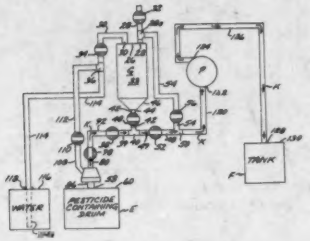
a programmer for controlling the movement of said pistons, thus controlling the warp yarns for providing a desired pattern in the fabric; and said plurality of saidjacks being removable and juxtaposable with respect to position and number in accordance with a desired density of said warp yarns, and further arranged in at least two tiers, said tiers being in spaced elevational relationship to one another, above said warp yarns, such that said piston rods extend in a generally vertical direction.

4,195,672

PORTABLE LIQUID PESTICIDE TRANSFER ASSEMBLY

James F. Freeman, 4344 Greenbrier Rd., Long Beach, Calif. 90808

Filed May 24, 1978, Ser. No. 909,037
Int. Cl.[2] B65B 31/00
U.S. Cl. 141—91 10 Claims



1. In combination with a flat bed truck that has a side wall extending from said bed, a drum that holds a toxic liquid pesticide and has an opening defined by a circular upwardly extending bead in an upper portion thereof, a wash water containing drum that may be disposed adjacent said flat bed, and a tank to which the pesticide is to be dispensed, a portable assembly capable of being removably supported from said side wall for selectively transferring said pesticide in a closed path either directly from said drum when the latter is adjacent said sidewall, said assembly including:

a. a closure assembly that includes a cup-shaped body insertable in said opening in said drum, said body having at least one longitudinal port therein, a first tube that extends downwardly from said cup-shaped body and supported thereby that is in communication with the interior thereof, normally closed spring-loaded valve means in said first tube that is open when subjected to a downwardly directed force, and flange means that extend outwardly from said body that sealingly and removably engage said bead to hold said closure assembly on said drum;

b. first, second, third, fourth, fifth, sixth, seventh and eighth valves;

c. a pump that has a suction and discharge opening;

d. a fixture assembly that includes a shell that defines a confined space, a second tube that extends from said shell and is in communication with the interior thereof, said second tube removably sealing with the interior of said cup-shaped body, a tubular probe that extends through said shell and said second tube and cooperating with the latter to define an annulus-shaped space that is in communication with said confined space and the interior of said drum, lock means that removably secure said shell in communication with said confined space;

e. an elongate vertically disposed metering cylinder that has longitudinal graduations thereof that indicate the volume of pesticide in said cylinder, said cylinder having a top that has first and second openings therein and a bottom that has a third opening therein;

f. first, second, third, fourth, fifth, sixth, seventh, and eighth conduits, said first conduit connected to said first opening and first valve; said second valve connected to said second opening and second valve; said third conduit connected to said second valve and said wash water drum; said fourth conduit connected to said third conduit and said opening in said shell and having said eighth valve therein; a fifth conduit extending from said probe to said suction of said pump, said fifth conduit having said seventh, third and fifth valves therein; a sixth conduit extending from said fifth conduit between said fifth valve and suction of said pump to said first conduit, said sixth conduit having said sicth valve therein; a seventh conduit extending from said discharge of said pump to said dispensing tank, and an eighth conduit extending from said fifth conduit between said third and fifth valves to said third opening, said eighth conduit having said fourth valve therein; and the suction created when said pump operates causing liquid pesticide to flow from said drum in which it is contained to said dispensing tank when said seventh, third and fifth valves are open and the balance of said valves closed; said pump when said seventh, third and fourth valves are open and the balance of said valves closed causing liquid pesticide to flow from said drum in which it is contained to said cylinder to have a desired quantity of said pesticide in said cylinder; said pump when said first, fourth and fifth valves are open and the balance of said valves closed transferring liquid pesticide from said cylinder to said dispensing tank; said pump when said eighth, seventh, third and fifth valves are open and the balance of said valves closed causing wash water to flow from said wash water drum through said third conduit, fourth conduit, confined space in said shell, said annulus space, said longitudinal port, the interior of said pesticide containing drum, said probe, said fifth conduit, pump and seventh conduit to said dispensing tank, and said pump when said second, fourth and fifth valves are open causing wash water to flow from said wash water drum through said third and second conduits to wash the interior of said cylinder and discharge therefrom through said eighth conduit, portion of said fifth conduit, pump and seventh conduit to said dispensing tank;

g. a frame that supports said cylinder and at least a portion of said valves and conduits; and

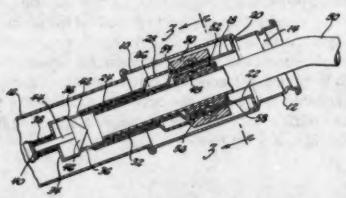
h. first means for removably supporting said frame from a side wall of a flat bed of an automotive vehicle.

4,195,673

FUEL TANK FILL TUBE WITH A MAGNETICALLY ACTUATED VALVE

Richard W. Johnston, Troy; John G. Neuman, Grosse Pointe Woods; Thaddeus Schroeder, Sterling Heights, all of Mich., and Norman L. Traub, Cortland, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 20, 1978, Ser. No. 961,951
Int. Cl.[2] B65B 3/04
U.S. Cl. 141—349 2 Claims



1. A valved filler pipe for a fuel tank comprising; a tubular member secured to and extending into said fuel tank; a nonmagnetic fill tube secured to the inner surface of said tubular member and spaced therefrom, said nonmagnetic fill tube having openings at both ends thereof; a telescoping tube member surrounding said nonmagnetic fill tube and being slidably disposed on said nonmagnetic fill tube in the space between said nonmagnetic fill tube and said tubular member, said telescoping tube member having a closed end adjacent one open end of said nonmagnetic fill tube, a radial opening spaced longitudinally from said closed end, and a magnetic collar; and spring means urging said telescoping tube member in a direction to close the one open end of said nonmagnetic fill tube, said telescoping tube being movable, against said spring means, to communicate said radial opening with said one open end of said nonmagnetic fill tube to permit the passage of fuel through said nonmagnetic fill tube into the fuel tank, said movement occurring in response to insertion into the nonmagnetic fill

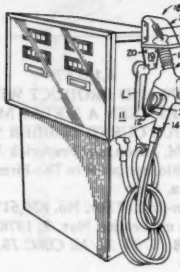
tube of a fuel fill nozzle carrying a rare earth magnet which magnetically couples with said magnetic collar.

4,195,674

PROTECTIVE HOOD FOR A VAPOR RECOVERY NOZZLE

Michael J. Madden, Long Beach, Calif., assignor to Pacific Oil Marketing Equipment Company, Paramount, Calif.

Filed Feb. 15, 1978, Ser. No. 878,004
Int. Cl.[2] B65B *3/00*; B67D *5/12*
U.S. Cl. 141—392 **21 Claims**



1. A pump comprising
a housing
an actuating lever movably mounted on said housing for movement between "on" and "off" positions,
a vapor recovery nozzle including a handle, an annular elastomeric face seal adapted to sealingly engage over a fill neck of a vehicle and a spout having an end portion extending through said face seal for disposition within said fill neck for filling purposes,
hood means secured exteriorly on said housing and independent thereof and defining an opening at a lower end thereof positioned to receive said spout therein for fully enclosing and protecting said face seal, and
means, including a mounting bracket secured on one of said housing, said lever and said hood means and adapted to have the handle of said nozzle removably mounted thereon, for only permitting mounting of said handle on said mounting bracket and disposition of said spout within said hood means exteriorly of said housing when said lever is maintained in its "off" position on said housing, said hood means extending outwardly from said housing in overlying relationship relative to said mounting bracket.

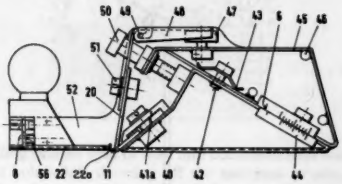
4,195,675

SHAVING WOOD

Hendrik Hupkes, Gaasterland 30, Zoetermeer, and Henk Hupkes, Burr. van Cordstraat 12, Ermelo, both of Netherlands

Continuation of Ser. No. 783,065, Mar. 30, 1977, abandoned. This application Oct. 30, 1978, Ser. No. 955,521
Claims priority, application Netherlands, Apr. 2, 1976, 7603436
Int. Cl.[2] B27C *1/14*; B27L *11/00*
U.S. Cl. 144—120 **12 Claims**

1. In a planing apparatus for shaving chips off material to be planed, which apparatus includes a frame, a front table movably mounted on the frame and having a bottom surface (hereinafter designated "sole") and a rear edge thereof, a back table movably mounted on the frame and having a base surface generally parallel to said sole, and a cutting tool mounted to said back table, the cutting tool having a front face spaced from said rear edge of the front table defining a gap therebetween and having a cutting edge at its lower end, said front face defining a rake angle γ with respect to a perpendicular plane through said sole, said front face of the cutting tool and said plane of the sole defining an oblique angle β consisting of angle $\gamma+90°$, with a bisector of angle β extending generally upward and an extension of said bisector (hereinafter designated "outer bisector") extending generally downward below the plane of said sole, the improvement in combination therewith for providing an optimal rive crack as chips are shaved, comprising:
(a) first means for adjusting the position of said cutting tool and thereby adjusting the cutting depth of said cutting edge relative to said sole from a reproducible zero-point to a selected cutting depth with said rake angle γ being maintained essentially constant while said edge is displaceable along a first path located within an adjustment area



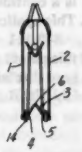
which is defined within the acute angle formed by said outer bisector and a rearward extension of the plane of said sole,
(b) a top iron movably mounted on said frame for abutting said front face of the cutting tool, the top iron having a lower edge spaced above the cutting edge of the cutting tool a variable distance defining between these two edges a free cutting face of the cutting tool, said top iron having a front surface which defines with said front face of the cutting tool a top iron angle ϕ, and
(c) second means for adjusting the position of said lower edge of the top iron along a second path which is chosen so that said angle ϕ remains essentially constant and said top iron remains adjacent the cutting tool.

4,195,676

WHEELED BRIEFCASE

Brooks Walker, 1280 Columbus Ave., San Francisco, Calif. 94133

Filed Nov. 16, 1978, Ser. No. 961,383
Int. Cl.[2] A45C *3/02*
U.S. Cl. 150—1.6 **4 Claims**



1. In a carrier such as a briefcase having a pair of opposed sides and an accordian-like bottom wall formed with a plurality of accordian folds,
a wheel mount positioned inwardly of one of said sides and formed with a downwardly opening central channel portion having opposed sidewalls,
a wheel rotatably mounted between said sidewalls,
one of said sidewalls having an extension passing under the lower edge of said one side of said carrier and upwardly along said one side,
the other of said sidewalls having an extension passing under

one of said accordian folds and upwardly along said one fold,
said one side and said one fold being clamped between said sidewalls and extensions.

4,195,677
GOLF CLUB COVER

Wilbert F. Hagg, 1815 Port Seabourne Way, Newport Beach, Calif. 92660, and Henry W. Hagg, 2833 Serang Pl., Costa Mesa, Calif. 92626

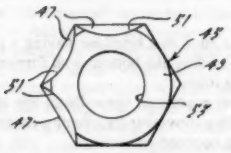
Filed Feb. 26, 1979, Ser. No. 15,117
Int. Cl.[2] B65D *65/02*
U.S. Cl. 150—52 G **3 Claims**

1. A golf club covering device comprising:
a cylindrical tube adapted to receive the shaft of said golf club;
a dished lower surface projection extending from the upper edge of said tube and aligned in cantilever to support and partly enclose the head of said club, said lower surface projection including a lower peripheral mating edge partly extending thereabout;
a dished upper surface hingedly connected proximate said tube to said lower peripheral mating edge for pivotal motion about said tube, said upper surface including an upper peripheral mating edge conformed to mate with said lower edge; and
clasp means formed on said upper surface for engaging said lower peripheral edge when said upper and lower edges are aligned for mating engagement.

4,195,678
NUT

Tyrus R. Pinchback, West Bloomfield, Mich., assignor to Wilson-Garner Company, Troy, Mich.

Continuation of Ser. No. 667,051, Mar. 15, 1976, abandoned, which is a division of Ser. No. 490,463, Jul. 22, 1974, Pat. No. 3,989,082, which is a continuation of Ser. No. 230,441, Feb. 29, 1972, abandoned, which is a continuation of Ser. No. 10,940, Feb. 12, 1970, abandoned. This application Oct. 6, 1977, Ser. No. 840,111
The portion of the term of this patent subsequent to Nov. 2, 1993, has been disclaimed.
Int. Cl.[2] F16B *39/28*
U.S. Cl. 151—34 **3 Claims**



1. A concentric nut that is reusable and substantially free spinning off and on and having an axis comprising a body having an outer periphery with flats thereon and an inner threaded aperture and an annular flat bearing surface on at least one end face, said outer periphery, aperture, and bearing surface being substantially coaxial and the outer periphery being substantially symmetrical in shape with respect to said axis, said outer periphery having separate individual recess means of substantial width and depth in each of a plurality of the flats on substantially only one axial side of the body to provide said one axial side with a substantially lesser mass than the other axial side so that the mass of the nut is asymmetric with respect to said axis to provide for eccentric gripping of several bolt threads when the nut is threaded home on a bolt, said recess means terminating radially outwardly of said aperture and being less than the length of the nut and extending into one end face of the nut, the recess means extending into the bearing surface.

4,195,679
COMPOSITION AND PRODUCT WITH IMPROVED ADHESION BETWEEN A METAL MEMBER AND A CONTIGUOUS CURED RUBBER SKIM STOCK

Steven E. Schonfeld, Akron, and Frederick J. Ravagnani, Uniontown, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

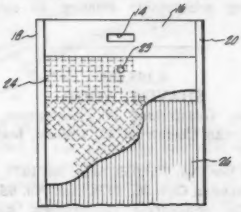
Continuation-in-part of Ser. No. 859,617, Dec. 12, 1977, abandoned. This application Nov. 2, 1978, Ser. No. 956,944
Int. Cl.[2] B32B *15/06, 31/26;* C08C *19/20;* C08F *8/34*
U.S. Cl. 152—359 **12 Claims**

7. A tire having improved adhesion between a cured rubber skim stock of conventional composition, and, brassed metal reinforcing members imbedded therein, the improvement wherein about 0.5 to about 15 parts per hundred parts rubber of a sulfide of copper has been incorporated into said stock prior to curing.

4,195,680
COLOR VARIABLE WINDOW COVERING

David L. Hyman; Robert J. Cayton, and Kurt E. Rosenquist, all of Pacific Palisades, Calif., assignors to Louverdrape, Inc., Santa Monica, Calif.

Continuation of Ser. No. 733,316, Oct. 18, 1976, abandoned, which is a continuation-in-part of Ser. No. 679,764, Apr. 23, 1976, Pat. No. 4,049,038. This application Aug. 7, 1978, Ser. No. 931,547
Int. Cl.[2] E16B *9/26*
U.S. Cl. 160—166 A **7 Claims**



1. A louver for a color variable louvered covering system comprising an elongate panel forming the body of said louver, a flange along each elongate edge of said panel, said flanges extending inwardly toward one another on a first side of said panel, a first transparent sheet of a first color disposed over said elongate panel between said flanges, a second transparent sheet of a second color disposed over said first sheet between said flanges, the colors of said transparent sheets being dissimilar to the color of said panel so that the several colors combined with each other to define a panel of a third color, and mounting means for fixing said sheets to said panel.

4,195,681

FLY SCREENS FOR WINDOWS

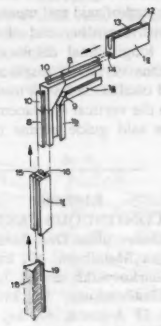
Jack E. Douglas, Walsall, and Richard J. Bigley, Telford, both of England, assignors to Arthur Shaw Manufacturing Ltd., West Midlands, England

Filed Jan. 10, 1978, Ser. No. 868,425

Claims priority, application United Kingdom, Jan. 12, 1977, 1072/77

Int. Cl.[2] E06B *9/00*

U.S. Cl. 160—371 **6 Claims**



1. A fly screen for a fixed frame comprising four elongate elements joined together by respective corner cleats to form a screen frame, means on the elongate elements for mounting the screen frame on the fixed frame, a rebate extending length-wise of each of said elongate elements on one face thereof, and each said corner cleat having a rigid body with a rebate formed therein, said rebate of each of said corner cleats extending contiguously with each said rebate in adjacent frame elements so as to extend between and join said adjacent rebates of said adjacent frame members at an obtuse angle to form in said one face of said screen frame a continuous groove extending around said screen frame, fly-netting extending over said one face of said screen frame and the marginal edge of said fly-netting extending into said groove and retained therein by an elongate wedging member comprising a strip of flexible and resilient material extending into said continuous groove whereby said wedging member is in continuous engagement with said marginal edge of said netting entirely around said one face of said screen frame, said elongate frame elements each being of similar cross-section and said screen frame further comprising four elongate adaptor members each mounted on a respective one of said frame elements by interengagable lengthwise complementary formations, said formations including T-shaped grooves and T-shaped flanges whereby said adaptor member can be mounted on said frame elements by relative sliding movement.

4,195,682

METHOD AND APPARATUS FOR PROVIDING AIR VENTS OR HOLES IN CASTING MOLES OF MOLDING SAND

Gunter Muller, Karlsruhe, Fed. Rep. of Germany, assignor to ARENCO-BMD Maschinenfabrik GmbH, Fed. Rep. of Germany

Filed Jun. 15, 1978, Ser. No. 915,677

Claims priority, application Fed. Rep. of Germany, Jun. 15, 1977, 2726876

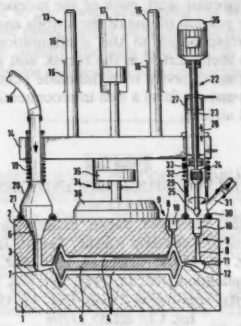
Int. Cl.[2] B22C *23/00*

U.S. Cl. 164—6 **7 Claims**

1. A method for forming at least one air vent or hole in a casting mold comprising the steps of:

(a) providing a casting mold having top and bottom mold parts joined at a parting plane to define a mold cavity, the top part having at least one blind hole originating at the parting plane of said top part and an inlet;

(b) pressurizing said mold cavity by connecting a source of compressed gas to said inlet;



(c) drilling said air vent or hole into communicaton with said blind hole while drawing off the materials produced by drilling directly at the drilling point by drilling said vent or hole with a drilling tool disposed within a suction hood.

4,195,683

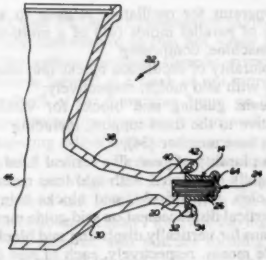
METHOD OF FORMING METAL ARTICLE HAVING PLURALITY OF AIRFOILS EXTENDING OUTWARDLY FROM A HUB

William S. Blazek, Valley City, Ohio, assignor to TRW Inc., Cleveland, Ohio

Filed Dec. 14, 1977, Ser. No. 860,581

Int. Cl.[2] B22C *9/04*; B22D *19/04*

U.S. Cl. 164—10 **12 Claims**



1. A method of forming a metal article having a plurality of airfoils extending outwardly from a hub, said method comprising the steps of forming a mold having a cavity with a configuration corresponding to the configuration of the article and having a portion which receives a plurality of metal airfoils, said step of forming a mold including forming the portion of the mold which receives the plurality of metal airfoils by performing the steps of providing a plurality of metal airfoils each of which has a root portion and a blade portion, placing the metal airfoils in a circular array, covering the root portion of each of the airfoils with wax, said step of covering the root portion of the airfoils with wax including the step of forming wax locating surfaces which are accurately positioned relative to the blade portions of the airfoils, said step of placing the metal airfoils in a circular array including the step of accurately positioning the metal airfoils relative to each other by engaging the wax locating surfaces, covering the circular array of metal airfoils with a wet coating of liquid ceramic mold material, holding the metal airfoils against movement relative to each other during said step of covering the circular array of

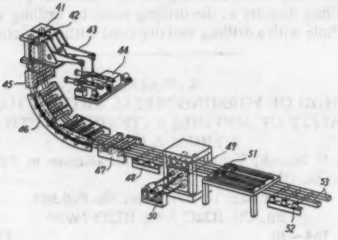
airfoils with a wet coating of ceramic mold material by engaging the wax locating surfaces formed on the wax coverings over the root portions of the metal airfoils, and drying the wet coating of ceramic mold material to form a circular wall with a circular array of recesses which extend outwardly from the center of the circular wall, each of the recesses containing at least the blade portion of one of the airfoils and having a configuration corresponding to the configuration of the blade portion of the metal airfoil in the recess, and pouring molten metal into the mold cavity with the blade portions of the airfoils in the recesses to form a hub interconnecting the circular array of metal airfoils.

4,195,684

APPARATUS FOR MULTI-STRAND CONTINUOUS CASTING

Yutaka Tsuchida, Yokosuka, Japan, assignor to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 750,437, Dec. 14, 1976, Pat. No. 4,149,583.
This application Dec. 15, 1977, Ser. No. 860,941
Claims priority, application Japan, Dec. 18, 1975, 50/151589
Int. Cl.[2] B22D *11/04*
U.S. Cl. 164—416 **2 Claims**



1. Apparatus for oscillating relative to a fixed support a plurality of parallel molds (41) of a multi-strand continuous casting machine, comprising

(a) a plurality of oscillation blocks (56) adapted for connection with said molds, respectively;

(b) means guiding said blocks for vertical displacement relative to the fixed support, including

(1) a base member (54);

(2) a plurality of generally vertical fixed guide means (42) rigidly connected with said base member adjacent the molds, respectively, said blocks being connected for vertical displacement on said guide means, respectively;

(c) means for vertically displacing said blocks relative to said guide means, respectively, each of said displacing means including

(1) a generally horizontal oscillation lever (43) pivotally connected with said base member;

(2) means (61) for connecting one end of said oscillation lever with said oscillation block;

(3) drive means for pivoting said oscillation levers including

(a) a motor (65);

(b) eccentric cam shaft means (68) driven by said motor having a plurality of successive adjustably connected coaxial sections, each of said sections including an eccentricity associated with one of said oscillation levers, respectively, the eccentricities of successive sections being angularly spaced; and

(c) means for connecting said cam shaft sections with the other end of each of said oscillation levers, respectively; and

(4) said connecting means including

(a) a fixed support (64);

(b) a frame (74) pivotally connected with said support about a horizontal pivot axis (75);

(c) a generally vertical link (83) connected at one end with said cam shaft means and at the other end with said frame, whereby rotation of said cam shaft vertically oscillates said frame about said horizontal axis via said link;

(d) sliding block means (76) arranged within said frame, said sliding block means being longitudinally displaced within said frame in response to the vertical oscillations thereof; and

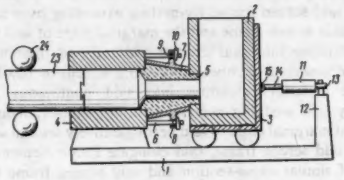
(e) generally vertical rod means (63) pivotally connected at its lower end with said sliding block means, the upper end of said rod means being pivotally connected with the other end of said oscillation lever, whereby longitudinal displacement of said sliding block means vertically displaces said rod means to pivot said oscillation levers to vertically oscillate the molds via the vertical displacement of said oscillation blocks on said guide means relative to said fixed support.

4,195,685

HORIZONTAL CONTINUOUS CASTING APPARATUS

Vladimir T. Sladkoshteev, ulitsa Dzerzhinskogo, 34, kv. 11; Oleg A. Shatagin, ulitsa Melnikova, 47, kv. 9; Samuil F. Khalemsky, ulitsa Kharkovskikh divizy, 7/1, kv. 31; Viktor V. Sachko, ulitsa Danilevskogo, 10, kv. 147/148; Boris F. Abraimov, ulitsa 23 Avgusta, 47, kv. 65, all of Kharkov; Anatoly I. Manokhin, 2 Schipovsky pereulok, 8, kv. 24, Moscow; Petr P. Mishin, prospekt Lenina, 60, kv. 39, Tula; Valery P. Druzhinin, ulitsa Martenovskaya, 5, kv. 10, Tula; Leonid S. Nechaev, ulitsa Metallurgov, 3, kv. 32, Tula; Stanislav M. Kozachenko, ulitsa Slinko, 12, kv. 28, and Jury M. Kuchminsky, prospekt 50-Letia VLKSM, 79, kv. 28, both of Kharkov, all of U.S.S.R.

Continuation of Ser. No. 753,175, Dec. 22, 1976, abandoned.
This application Sep. 21, 1978, Ser. No. 944,584
Int. Cl.[2] B22D *11/08*
U.S. Cl. 164—420 **6 Claims**



1. A horizontal casting apparatus for continuously casting metals and alloys, including a frame, a tundish movable along said frame and in which molten metal is received, said tundish having a plurality of outlets for discharging parallel flows of molten metal, and a plurality of strand units, each of said strand units being connected to a respective outlet of said tundish, each of said strand units comprising:

a refractory conduit arranged horizontally at and communicating with a respective outlet of said tundish;

a horizontal mold communicating with said refractory conduit;

withdrawal rolls to withdraw cast ingots from said mold;

means for clamping said mold and said refractory conduit together associated with said mold and with said refractory conduit to effect fluid-tight connection between said mold and said refractory conduit, wherein said means for clamping comprises a plurality of rods in parallel arrangement with each other, said rods extending from said horizontal mold towards the conduit, a centrally disposed cone-shaped sleeve snugly fitted on a tapered outer surface of the conduit and serving as a distance piece between said horizontal mold and said tundish, said sleeve flaring

towards said horizontal mold, a ring formed with holes around its periphery and clasping externally said sleeve, said ring being mounted by said rods being inserted through said holes on said periphery of said ring, the inner surface of said ring rigidly connected to the outer surface of said sleeve; and

means for adjusting said means for clamping to adjust the pressure at which said conduit and said mold are clamped together.

4,195,686

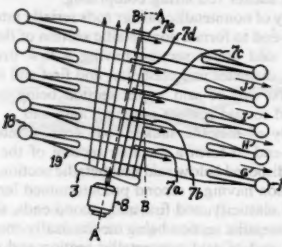
HEAT EXCHANGER AIR DEFLECTORS

Linden W. Pierce, Rome, Ga., assignor to General Electric Company, New York, N.Y.

Filed Jun. 29, 1978, Ser. No. 920,558

Int. Cl.[2] F28F *13/06*

U.S. Cl. 165—1 **14 Claims**



13. An improved method of providing cooling air to a transformer heat exchanger of the type employing at least one cooling fan to remove heat from the exchanger tubes, the improvement comprising the steps of:

arranging a plurality of air deflectors one on each row of said tubes to redirect cooling air from said fan along the axis of a large number of said heat exchanger tubes.

4,195,687

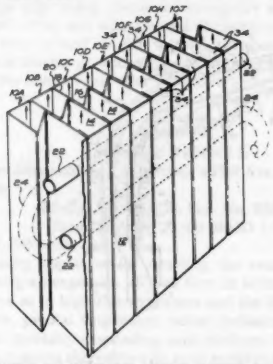
SPACE HEATING PANELS

Robert E. Taziker, 248 Cherry Tree Rd., Blackpool, Lancashire, England

Filed Dec. 12, 1977, Ser. No. 859,669

Int. Cl.[2] F24H *3/00*; F28F *1/30*

U.S. Cl. 165—129 **6 Claims**



1. A heating panel comprising a plurality of similar heat conducting elongated plates, each plate having a defined length direction and being profiled in cross section transverse to said length direction, each plate having first and second web portions in parallel planes at opposite sides of a flange portion so that there is defined in said cross section of the plate transverse to said length direction a Z shape, the plates being pushed together with their lengthwise directions parallel so that each of said first web portions abut the second web portions of adjacent plates, each of said flange portions lying in a different single plane, said single planes being parallel and inclined relative to the planes containing the first and second web portions, the panel further including one or more lengths of heating pipe passing through apertures in the first web portions of the plates and being in heat conducting engagement therewith.

4,195,688

HEAT-TRANSFER WALL FOR CONDENSATION AND METHOD OF MANUFACTURING THE SAME

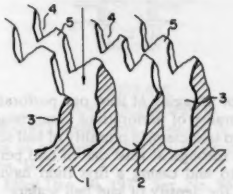
Kunio Fujie, Tokyo; Wataru Nakayama; Heikichi Kuwahara, both of Kashiwa; Takahiro Daikoku, Ibaraki, and Kimio Kakizaki, Hitachi, all of Japan, assignors to Hitachi, Ltd. and Hitachi Cable, Ltd., both of, Japan

Continuation of Ser. No. 647,787, Jan. 9, 1976, abandoned. This application Jun. 30, 1978, Ser. No. 921,076

Claims priority, application Japan, Jan. 13, 1975, 50-5626; Sep. 22, 1975, 50-114479

Int. Cl.[2] F28B *9/08*; F28F *1/36*

U.S. Cl. 165—133 **6 Claims**



1. A heat-transfer wall for vapor condensation having a wall surface kept at a low temperature so that hot vapor brought into contact with the surface condenses thereon, comprising a multiplicity of grooves formed at a pitch of not more than 1 mm. and having a depth of not more than 2 mm. on the heat-transfer surface constituting the low-temperature wall surface, thin and sharply tapering ridges that are arranged perpendicular to the heat-transfer surface and that are defined and separated by the grooves, said ridges having upper edges that are thin and sharply tapered and notches formed in the edges of the ridges at a pitch of not more than 1 mm. and having a depth less than that of the grooves, said notches forming sharply tapering peaks therebetween on said ridges and the notches each having a bottom portion inclined with respect to the heat-transfer surface.

4,195,689

CHEMICAL WATERFLOOD PROCESS DEVELOPMENT

Harry L. Chang, Tulsa, Okla., assignor to Cities Service Company, Tulsa, Okla.

Filed Nov. 6, 1978, Ser. No. 958,277

Int. Cl.[2] E21B *43/22*

U.S. Cl. 166—246 **7 Claims**

1. In a process for recovering oil from an oil bearing subterranean formation wherein a surfactant system is injected into the formation through an injection well and displaced toward a production well in fluid communication with the formation, the improvement comprising injecting after the surfactant system has been injected, from 0.03 to 0.5 pore volumes of water containing 100 to 2,500 wt. ppm of a biopolymer, and then injecting 0.27 to 1.0 pore volumes of water containing 100 to 2,500 wt. ppm partially hydrolyzed polyacrylamide.

4,195,690

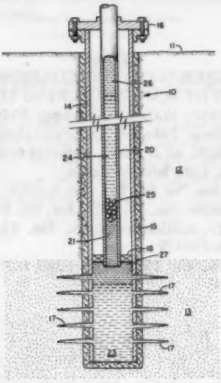
METHOD FOR PLACING BALL SEALERS ONTO CASING PERFORATIONS

Steven R. Erbstoesser, and Christopher M. Shaughnessy, both of Houston, Tex., assignors to Exxon Production Research Company, Houston, Tex.

Continuation-in-part of Ser. No. 850,878, Nov. 14, 1977, abandoned. This application Aug. 14, 1978, Ser. No. 933,305

Int. Cl.[2] E21B *33/13, 43/26, 43/27*

U.S. Cl. 166—281 **20 Claims**



1. A method for plugging at least one perforation in a well case having a plurality of perforations comprising

introducing into said casing a plurality of ball sealers sized to restrict flow through at least one of said perforations;

introducing into said casing a first fluid having a density greater than the density of said ball sealers;

after introduction of the first fluid, introducing into the casing a second fluid having a density no greater than the the density of said ball sealers density; and

transporting at least some of said ball sealers down the casing at the transition region between said first and second fluid.

4,195,691

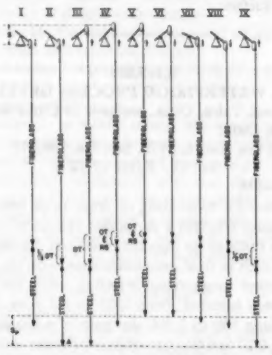
COMPOSITE SUCKER ROD STRING AND METHOD OF USE THEREOF

Robert P. Newling, St. Charles, Ill., assignor to Joslyn Mfg. and Supply Co., Chicago, Ill.

Filed Nov. 1, 1978, Ser. No. 956,739

Int. Cl.[2] E21B *17/00, 43/00*

U.S. Cl. 166—315 **32 Claims**



8. A method of mechanically connecting a subsurface well pump to a surface mounted pumping unit by means of a sucker rod string, comprising the steps of:

serially interconnecting a plurality of metallic sucker rods to form a lower section of the sucker rod string;

serially interconnecting a plurality of nonmetallic sucker rods to form an upper section of the sucker rod string;

serially coupling said upper and lower sections of the sucker rod string;

mechanically coupling said lower section to said well pump;

mechanically coupling said upper section to said pumping unit; and

adjusting the lengths of said upper and lower sections forming the string in accordance with weight and elasticity of each section and the weight of the fluid lifted during each pump stroke to optimize pumping efficiency.

16. A composite sucker rod string for mechanically connecting a surface pumping unit to a subsurface pump located within a well, said sucker rod string comprising:

a plurality of nonmetallic sucker rods serially interconnected end-to-end to form a nonmetallic section of the sucker rod string, said upper section having a first predetermined length, diameter and elasticity, and first and second ends, said first end of said upper section being mechanically coupled to said surface pumping unit; and

a plurality of metallic sucker rods serially interconnected end-to-end to form a metallic section of the sucker rod string disposed below said nonmetallic section, said metallic section having a second predetermined length, diameter and elasticity, and first and second ends, said first end of said metallic section being mechanically coupled to said second end of said nonmetallic section and said second end of said metallic section being mechanically coupled to said pump, the lengths and diameters of the metallic and nonmetallic sections being selected to maximize the potential energy stored in the sucker rod string as a result of stretch induced in the sucker rod string by the weight of said string relative to the force required to actuate said subsurface pump.

4,195,692

FIRE-FIGHTING NOZZLE ASSEMBLY

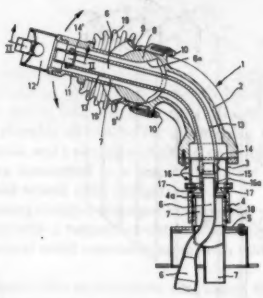
Guy Dion-Biro, 46 Av du Chateau, 94.300 Vincennes, France

Filed Jan. 30, 1978, Ser. No. 873,491

Claims priority, application France, Jan. 28, 1977, 77 02373

Int. Cl.[2] A62C *31/02*

U.S. Cl. 169—25 **8 Claims**



1. A fire-fighting cannon nozzle assembly for simultaneous discharge of two fire-fighting agents, comprising: a body assembly; a pair of substantially coaxial nozzle conduits for said agents in the body assembly; feed conduits for said agents; nozzle discharge means adapted to allow outlet of said agents; and means for rotary movement of said body assembly in a horizontal plane, said body assembly being further provided with a swivel joint means; said swivel joint means accomodat-

ing of said pair of nozzle conduits and allowing for rotary movement of part of said nozzle assembly in a vertical plane about a horizontal axis, each nozzle conduit being provided with a rotary and sealing sleeve for the simultaneous rotary movement of said body assembly about a vertical axis.

4,195,693

DEVICE FOR EXTINGUISHING FIRES FROM THE AIR

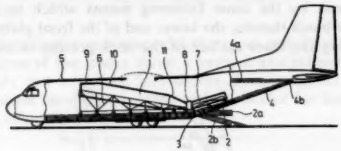
Heinz Busch, Ottobrunn, and Peter Schroder, Hamburg, both of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm GmbH, Munich, Fed. Rep. of Germany

Filed Apr. 18, 1977, Ser. No. 788,662

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1976, 2619350

Int. Cl.[2] A62C *39/00*

U.S. Cl. 169—53 **2 Claims**



1. In a device for extinguishing of surface fires from the air by means of an aircraft having a cargo compartment and a rear-loading door providing access to said cargo compartment and at least one transportable fire-extinguishing standard equipment means mounted in said cargo compartment, said fire-extinguishing standard equipment means including at least one tank housing fire-extinguishing means therein, the improvement comprising wherein the bottom wall of said tank is substantially elongated, extending substantially coextensively with the longitudinal axis of said aircraft over a major portion of said bottom wall of said cargo compartment, and is inclined sloped downwardly toward said rear-loading door, wherein at the lowermost point of said bottom wall of said tank there is provided at least one discharge mechanism for facilitating a discharge of said fire-extinguishing means from said tank, and wherein the angle of inclination of said bottom wall of said tank is in the range of 10 to 15 degrees with respect to the bottom wall of said cargo compartment, wherein said discharge mechanism includes a discharge pipe and a valve, said discharge pipe being connected swingably to said tank adjacent said valve, and wherein said discharge pipe is connected to said door of said aircraft so that during an opening of said door, said discharge pipe will be swung therewith to a position below the level of said tank.

4,195,694

RESCUE VEHICLE

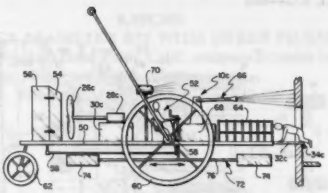
Nicholas Gizzarelli, Sr., 195 Prince's Hill Ave., Barrington, R.I. 02806

Filed Aug. 14, 1978, Ser. No. 933,784

Int. Cl.[2] A62C *25/00*; B64D *1/08*

U.S. Cl. 169—70 **9 Claims**

1. Safety apparatus for enabling the rescue from and/or combating emergencies such as fires in normally inaccessible locations as in high-rise structures and the like, comprising a platform, pivotal suspension means including an attachment line for pivotally suspending said platform from a vertically remote position thereabove so as to position said platform in a first position laterally offset from the locus of said emergency in said structure, propulsion means mounted on said platform for propelling said platform along the arc permitted by said line laterally to a second position proximate to said locus, and means projecting from the forward end of said platform for temporarily engaging said platform to said structure at the locus of said emergency whereby people trapped in said structure may move to said platform, said platform including a generally centrally mounted axle in turn supporting a pair of wheels mounted on opposite sides of said platform so as to enable said apparatus to be rollingly supported by surfaces such as city streets and the like, said pivotal suspension means



including a pivotal yoke alternatively movable from an upright position wherein the apparatus may be suspended from said line and an alternate generally horizontal position wherein the yoke may be attached to a vehicle or the like for trailer connected movement thereby.

4,195,695

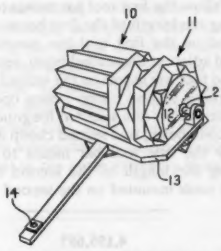
LAND IMPRINTER

Robert M. Dixon, Tucson, Ariz., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Dec. 30, 1977, Ser. No. 866,079

Int. Cl.[2] A01B *29/04*

U.S. Cl. 172—1 **9 Claims**



1. A method for modifying a land surface to control water runoff collection, direction, and infiltration, which comprises imprinting the land surface with alternating—

water-runoff-directing geometric patterns comprising a plurality of parallel furrows about 0.5 to 2 meters in length, about 5 to 15 centimeters in depth, and about 15 to 30 centimeters in width, and spaced about 25 to 50 centimeters apart, which collect and direct runoff water to

adjacent water-infiltration-enhancing geometric patterns arranged in rows and comprising a plurality of quadrilateral pyramidal indentations about 25 to 100 centimeters in length, 5 to 15 centimeters in depth, and 15 to 30 centimeters in width,

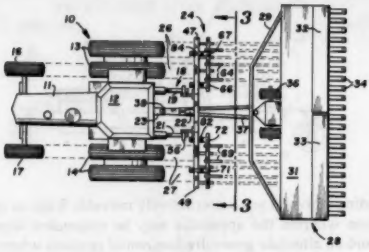
said rows of water-infiltration-enhancing geometric patterns being oriented perpendicularly and transversely to and interconnected with said adjacent water-runoff-directing geometric patterns in order to receive the collected and directed runoff water.

4,195,696

EARTHWORKING IMPLEMENT WITH OPEN CENTER FRAME SECTION

Earl A. Lundin, Rte. 1, Marietta, Minn. 56257

Filed Sep. 23, 1977, Ser. No. 836,048
Int. Cl.[2] A01B *37/00*
U.S. Cl. 172—451 **13 Claims**



1. An earthworking implement adapted to be mounted on a three-point hitch of a draft vehicle comprising: a transverse frame having an open center section with an open bottom, said center section having a pair of upright posts and a top horizontal member secured to the upper ends of the posts, means secured to the midsection of the horizontal member adapted to be attached to the control link of the three-point hitch, a first generally horizontal beam secured to the outside of a middle section of one post, a second generally horizontal beam secured to the outside of a middle section of the other post, a first brace secured to the top of one post and a mid-section of the first beam, a second brace secured to the top of the other post and a mid-section of the second beam, means secured to the lower end of each post adapted to be coupled to a draft link of the three-point hitch, first tool bar means located adjacent the first beam, first means mounting the first tool bar means on the first beam, said first means comprising first clamp means operable to hold the first tool bar means at a selected longitudinal position relative to the first beam, said first clamp means being releasable to allow the first tool bar means to be longitudinally adjusted along the length of the first beam, first earthworking tools mounted on the first tool bar means, second tool bar means located adjacent the second beam, second means mounting the second tool bar means on the second beam, said second means comprising second clamp means operable to hold the second tool bar means at a selected longitudinal position relative to the second beam, said second clamp means being releasable to allow the first tool bar means to be longitudinally adjusted along the length of the second beam, and second earthworking tools mounted on the second tool bar means.

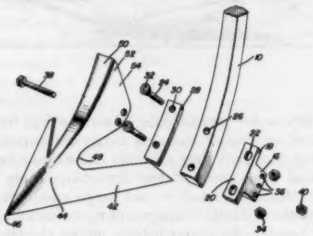
4,195,697

SHOVEL COUPLING WITH ANGLE OF ATTACK ADJUSTMENT

Robert M. Griffin, Box P, Chester, Mont. 59522

Filed Feb. 10, 1978, Ser. No. 876,886
Int. Cl.[2] A01B *15/00*
U.S. Cl. 172—730 **2 Claims**

1. In combination, a cultivator shovel having a mounting portion, a shank for supporting the shovel and a coupling connecting the mounting portion of the shovel to said shank, said coupling including an adapter block, means releasably and rigidly securing said block to said shank independently of the shovel and means adjustably and removably securing the mounting portion of the shovel to said adapter block for enabling replacement of the shovel and varying the angle of attack of the shovel in relation to the soil to be cultivated without changing the position of the block in relation to the shank, said shank including a forwardly and downwardly angled stem at a predetermined angle, said adapter block being disposed against the rear surface of the shank at the lower end thereof, said means securing the adapter block to the shank including fastener means extending through the shank and adapter block for securing the block to the shank independent of the means securing the shovel to the block, said means securing the mounting portion of the shovel to the adapter block including a plurality of transverse holes in the adapter block spaced from each other in the longitudinal direction of the shank, said mounting portion of the shovel including a pair of legs straddling the shank and adapter block with each of the legs including an aperture therein receiving a fastener therethrough with the fastener also extending through one of the holes in the adapter block, thereby removably securing the shovel to the shank in adjusted position for varying the angle of attack of the shovel, said shovel including a neck portion immediately adjacent and below the mounting portion and sweeps immediately adjacent and below the neck portion with the neck portion having less cross-sectional dimension than the mounting portion and sweeps, a front plate mounted on the shank along the forward surface thereof and being secured to the shank by the same fastening means which secures the adapter block thereto, the lower end of the front plate extending along the inner surface of the neck portion of the sweep



shovel for reinforcing and strengthening the neck portion of the sweep shovel to reduce breakage, said shank being oriented at a predetermined stem angle with the plurality of transverse holes in the adapter block being oriented to enable a sweep shovel to be employed with any standard shank stem angle presently used on cultivators, said mounting block, shank and front plate being of the same width and having coinciding planar side surfaces, said mounting portion of the shovel including a web portion joining the legs with the inner surface of the mounting portion conforming with and in surface-to-surface contact with the front plate, shank and block, said front plate extending longitudinally beyond the lower end of the shank in cantilever fashion to support the neck portion of the shovel, said block including end extensions engaging the rear surface of the shank, said fastener means securing the block to the shank including a pair of bolts extending through the front plate, shank and extensions on the block, said bolts including heads countersunk into the front surface of the front plate, said plurality of holes in the block being disposed adjacent the rear edge thereof and said fastener extending through the legs and one of the holes in the block being a bolt to clampingly engage the legs with a major portion of the side surfaces of the block.

4,195,698

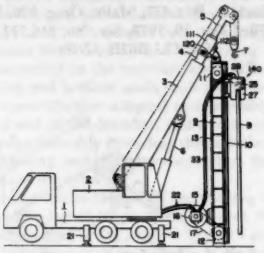
MACHINE FOR DRIVING VERTICAL MEMBERS

Tadashi Nakagawasai, Kawasaki, Japan

Filed Jan. 20, 1978, Ser. No. 871,093
Claims priority, application Japan, Jan. 29, 1977, 52/9028; Apr. 7, 1977, 52/39793; Jul. 6, 1977, 52/89654[U]
Int. Cl.[2] E21B *3/02;* **E02D** *5/34*
U.S. Cl. 173—44 **3 Claims**

1. A building machine for driving vertical members, comprising, a leader which is supported vertically during a driving operation, upper and lower sprockets mounted rotatably at upper and lower positions respectively of said leader, an endless chain which is engaged around the upper and lower

sprockets of said leader, powered means for driving said chain, a base body connected to said chain and forced by said chain to move vertically along said leader, the base body also being engagable with a member to be driven, a crane having pivotal



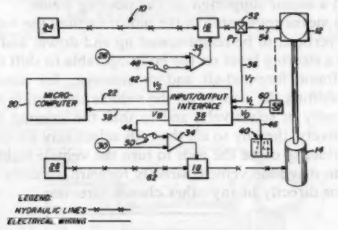
supporting means connecting with the upper end of said leader for rotation of the leader about a vertical axis whereby said base body can be turned in different directions, and leader fixing means between the crane and the leader for fixing the rotation of said leader.

4,195,699

DRILLING OPTIMIZATION SEARCHING AND CONTROL METHOD

Charles D. Rogers, and Joseph A. Fowler, both of Monroeville Borough, Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Jun. 29, 1978, Ser. No. 920,296
Int. Cl.[2] E21B *3/06*
U.S. Cl. 175—27 **22 Claims**



1. Method for optimizing rate of penetration of a drill within a given medium based upon the drilling parameters of revolutions of the drill per given time period and the thrust applied to the drill parallel to the direction of penetration, said method comprising:

applying a given preset start-up value for each drilling parameter to the drill;

monitoring the rate of penetration of the drill into such medium based upon the two parametric values being input into the drill;

applying incremental changes in the value of one of the drilling parameters to the drill, while keeping the other parameter value constant, until the penetration rate of the drill into such medium as monitored is maximized for such one parameter being incrementally changed;

applying incremental changes in the value of the other of the drilling parameters to the drill, while keeping the first parameter value constant, until the penetration rate as monitored is maximized for such second parameter being changed; and

continually alternatively applying incremental changes in the value of one of the drilling parameters to the drill while keeping the remaining parameter value constant until a maximized penetration rate as monitored is realized for the parameter being changed based upon prior changes made to the other parameter.

4,195,700

LARGE DIAMETER BIT WITH SWEEP PICKUP

Euclid P. Worden, Dana Point, Calif., assignor to Smith International, Inc., Newport Beach, Calif.

Filed Aug. 14, 1978, Ser. No. 933,160
Int. Cl.[2] E21C *13/02*
U.S. Cl. 175—340 **4 Claims**

1. A large diameter bit comprising:

a main bit body having a lower plate;

a plurality of cutter assemblies rotatively attached to said lower plate, said cutters extending downwardly therefrom to engage and disintegrate the formation at the face of a borehole; and

a sweep pickup assembly communicating with the interior of the drill column and having means for receiving drilling fluid along the face of the borehole and passing it therethrough to the interior of the drill column, said sweep pickup assembly comprising a central conduit connected to a radially extending pickup tube, said pickup tube having means for maintaining a constant flow of drilling fluid passing therethrough, said pickup tube extending from and adjacent to the central axis of the drill bit radially outward to a point adjacent the gage area of the drill bit, said pickup tube including an inlet opening extending along its entire length, with the vertical cross-sectional area of the pickup tube, at any point along the length of the tube, being substantially equal to the area of the inlet from that point to the outer extremity thereof.

4,195,701

RAISE DRILL HAVING WATER PASSAGES DIRECTED TOWARD THE ROLLER CUTTERS

Jackson M. Kellner, and George A. Alther, both of Midland, Tex., assignors to Smith International, Inc., Newport Beach, Calif.

Filed Jul. 24, 1978, Ser. No. 927,093
Int. Cl.[2] E21C *23/00*
U.S. Cl. 175—340 **6 Claims**

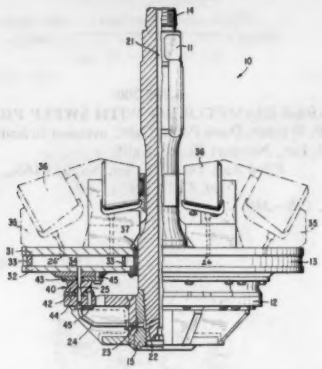
1. A drill for boring into earth formations comprising:

a drive stem having means at one end thereof for connecting to a drill string;

a bit body having a plurality of rolling cutters mounted thereon;

flexible means interconnected between said drive stem and said bit body for absorbing the impact and dynamic loads between the drive stem and the bit body and transferring the vertical thrust and the torque loads from the drive

stem to the bit body, said flexible means comprising an annular elastomeric member; and



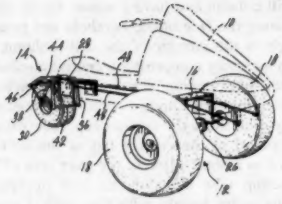
means for directing fluid against the surfaces of the cutters, said fluid directing means including passage means extending through the annular elastomeric member.

4,195,702

WHEEL KIT FOR SNOWMOBILE

Michel Denis, 3241 Doverthorn Rd., SE., Calgary, Alberta T2B 2G9, Canada

Filed Aug. 1, 1978, Ser. No. 930,027
Int. Cl.[2] B62M *27/00*; B62D *55/04*
U.S. Cl. 180—183 **3 Claims**



1. A wheel conversion device for snowmobiles having a chassis supported by an endless track and a pair of front skis, and adapted to replace the endless track and the front skis, comprising:

(a) a front wheel drive assembly including a frame adapted to be secured to the front end of the snowmobile chassis and a pair of laterally spaced wheels rotatably mounted on said frame and powered by the snowmobile engine; and

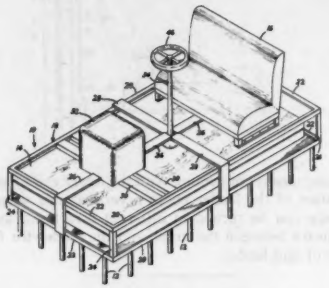
(b) a rear wheel steering assembly including a rear frame adapted to be secured to the rear end of the said chassis, a single wheel pivotally mounted on the rear frame and steering means interconnecting the rear wheel to the regular steering mechanism of the snowmobile, said rear wheel steering assembly further comprising a steering shaft rotatably mounted on the rear frame, an inverted U-shaped frame having its central portion secured to said steering shaft and its legs extending one on each side of the wheel and each forming one sloping leg of an A-shaped suspension mechanism which further comprises a spring-biased suspension device extending downwardly from the central portion of said inverted U-shaped frame and forming the other sloping leg of said A-shaped suspension mechanism and a transverse member pivotally connecting the end of each leg of said inverted U-shaped frame to the lower end of said spring-biased suspension device, the axle of the rear wheel being pivotally mounted on the transverse member at the intersection of said transverse member with the lower end of the suspension device.

4,195,703

UNIVERSALLY STEERABLE VEHICLE

William L. Hawkins, Box 457, Malin, Oreg. 97632

Filed Jun. 19, 1978, Ser. No. 916,711
Int. Cl.[2] B62D *57/00*
U.S. Cl. 180—7 R **4 Claims**



1. A ridable automotive vehicle which comprises

(a) a body,

(b) a multiplicity of normally parallel, tiltable body supporting and driving rods that extend downward from the body,

(c) a steering frame on the body operable to tilt the rods in various chosen directions, said rods being resiliently connected to the steering frame intermediate their ends and resiliently connected to the body at their upper ends,

(d) a motor supported on the steering frame,

(e) means responsive to the motor causing the rods, tilted or vertical, to be reciprocated up and down; and

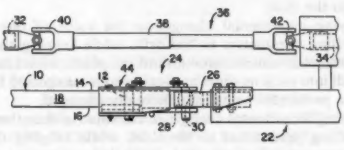
(f) a steering lever on the body operable to shift the steering frame fore-and-aft and/or sidewise, for simultaneously shifting the slant of all the vehicle supporting rods identically or selectively, and to shift the steering frame rotatively, thereby to tilt the rods selectively for enabling the rider to cause the rods to turn the vehicle right or left, or to drive the vehicle directly forward, directly backward, or directly in any other chosen direction.

4,195,704

HITCH ADAPTER

Merlyn D. Bass, Ottumwa; David L. Wolf, Cedar Falls; Ronald N. Grimstad, Centerville, all of Iowa, and John M. Flenniken, Senonches, France, assignors to Deere & Company, Moline, Ill.

Filed Jun. 12, 1978, Ser. No. 914,562
Int. Cl.[2] B60D *1/00*
U.S. Cl. 180—14 R **9 Claims**



1. In a tractor-trailing implement combination wherein the tractor includes a rearwardly extending drawbar, having a generally rectangular cross section with generally horizontal top and bottom surfaces and generally fore and aft corner edges along the lateral sides of said surfaces and a vertical pivot bore through the drawbar, and a rearwardly extending

PTO output shaft and the implement includes a tongue, having a forward hitch member with a vertical pivot element, and an implement drive shaft connected to and driven by the PTO output shaft by a power transmitting assembly, having front and rear universal joints with vertical axes of articulation respectively spaced equidistant forwardly and rearwardly of the axis of the vertical pivot element, the combination therewith of an improved hitch adapter for connecting the drawbar to the implement hitch member and comprising:

a housing mounted on the rearward end of the drawbar and having top and bottom walls with inner surfaces, a forwardly open chamber adapted to removably receive the rearward end of the drawbar, and a first vertical bore;

a vertical pin removably extending through the vertical bore in the housing and the drawbar when the housing is mounted on the drawbar;

a vertical pivot means carried by the housing rearwardly of the pin and adapted to pivotally connect the housing to the pivot element of the implement hitch member;

a generally horizontal clamp member mounted in the housing chamber between the drawbar and one of said housing walls and including a surface opposite the drawbar, at least one of said surfaces opposite the drawbar having a pair of laterally inclined areas diverging toward the drawbar;

and adjusting means operative between the housing and the clamp member for selectively vertically adjusting the clamp member in the housing chamber so that the inclined areas are engageable with the corner edges of the opposite drawbar surface to vertically clamp the drawbar between the clamp member and the opposite housing wall.

4,195,705

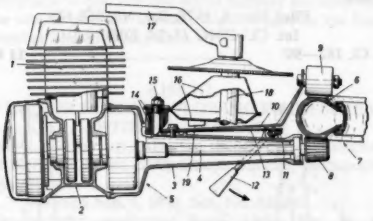
DRIVE MEANS FOR POWER-ASSISTED BICYCLE

Peter Resele, Graz, Austria, assignor to Steyr-Daimler-Puch Aktiengesellschaft, Vienna, Austria

Filed Apr. 11, 1978, Ser. No. 895,446

Int. Cl.[2] B62K *11/04*

U.S. Cl. 180—205 **6 Claims**



1. In a motor-assisted bicycle comprising a frame and a driven road wheel mounted in said frame for rotation in a plane: drive means for driving said road wheel, said drive means comprising

a drive housing carried by said frame and adapted to perform a pivotal movement transverse to said plane,

elastomeric sleeve means interposed between, and connected to, said drive housing and said frame, the sleeve means being adapted to be elastically deformed by said pivotal movement,

an engine in said drive housing and having a crankshaft,

a drive shaft non-rotatably connected to, and axially aligned with, said crankshaft and extending radially with respect to said road wheel,

a bevel wheel non-rotatably mounted on said drive shaft and engageable with said road wheel on one side thereof,

a pressure roller aligned with said bevel wheel in the axial direction of said road wheel and engageable with the latter on the side opposite to said bevel wheel,

a spring arm secured to said housing and carrying said pressure roller, the spring arm normally urging said bevel wheel and pressure roller into engagement with the respective sides of said road wheel,

a rotatable spreading cam pivoted to said housing and disposed between said housing and spring arm, the cam being manually operable to move said spring arm away from the housing in said axial direction so as to move said roller out of engagement with said road wheel, and

a stop arranged on said frame to engage the spring arm on further manual operation of the cam and to retain the spring arm to perform the pivotal movement of the housing under the elastic deformation of the sleeve means in a direction opposite to the movement of the spring arm to disengage the bevel wheel from the road wheel.

4,195,706

POWER STEERING VALVE SYSTEM

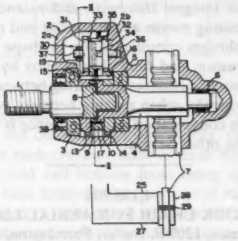
Hideo Konishi, Yorii, Japan, assignor to Jidoshakiki Co., Ltd., Tokyo, Japan

Filed Apr. 6, 1978, Ser. No. 894,085

Claims priority, application Japan, Apr. 11, 1977, 52/41199; Sep. 30, 1977, 52/117644

Int. Cl.[2] B62D *5/08*

U.S. Cl. 180—132 **9 Claims**



1. A power steering apparatus for a vehicle having a steering wheel, steerable road wheels and a power cylinder for assisting steering movement of said steerable road wheels, comprising:

a rotatable input shaft adapted to be operatively connected to said steering wheel;

a rotatable output shaft adapted to be operatively connected to said steerable road wheels, said input shaft and said output shaft being rotatable about a common first axis;

motion-transmitting means connecting said input shaft and said output shaft so that said output shaft can be rotated by said input shaft, said motion-transmitting means including means permitting limited, relative, angular displacement between said shafts about said first axis;

a valve for controlling operation of said power cylinder, said valve having a movable valve element;

a pair of external gears respectively affixed to said input shaft and said output shaft for rotation therewith;

a pair of further gears respectively meshed with said external gears for rotation therewith;

support means rotatably supporting one of said further gears for rotation about a second fixed axis;

a bearing member rotatably supporting the other of said further gears, said bearing member being mounted for lateral movement relative to said second axis and being connected to said movable valve element for effecting movement thereof;

linkage means interconnecting said pair of further gears for conjoint rotation, said linkage means including means permitting radial displacement of said other further gear relative to said one further gear in response to limited relative angular displacement between said input and output shafts and corresponding limited relative angular displacement between said external gears so that said radial displacement of said other further gear also dis-

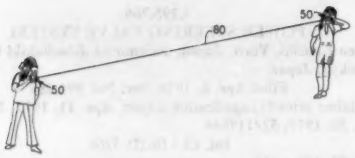
places said bearing member and thereby said movable valve element, whereby said valve supplies pressure fluid to said power cylinder to assist steering of said steerable road wheels.

4,195,707

COMMUNICATING DEVICE

Sam Kupperman, Chicago, and Dennis Kupperman, Glenview, both of Ill., assignors to RB Toy Development Co., Skokie, Ill.

Filed Feb. 17, 1978, Ser. No. 878,674
Int. Cl.[2] G08B 1/00
U.S. Cl. 181—138 **9 Claims**



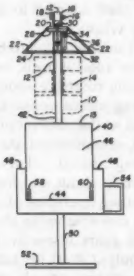
1. A device for communicating comprising a flat base and a hollow frustum integral therewith and extending outwardly therefrom, retaining means at the smaller end of said frustum, a discrete diaphragm complementary in shape to said smaller end of said frustum and held thereagainst by said retaining means, and means for connecting a string between a pair of said diaphragms, whereby when a string between two diaphragms is under tension conversation into one device is transmitted via the string to the other device.

4,195,708

WORK CHAIR FOR AERIAL LIFT

Charles C. Cannon, 1209 S. Butler, Farmington, N. Mex. 87401

Filed Oct. 2, 1978, Ser. No. 947,542
Int. Cl.[2] E04G 1/00
U.S. Cl. 182—2 **2 Claims**



1. A chair having a seat, a back, a pair of arms, and a rack attached to one of the arms for holding tools and work materials, the chair stably suspending and positioning a signpainter by gravity and manual means only, from a mobile, rotatable and extendible aerial ladder, comprising:

a bracket mounted to outer end of the aerial ladder and projecting outward;

a horizontal pivot mounted on outer end of the bracket;

a stationary aspect plate suspended from and free to swing from the horizontal pivot, the plate having a multiplicity of recesses equidistant from center of the plate for use in positioning the chair in a desired fixed aspect;

a vertical pivot mounted to and below the center of the stationary aspect plate;

a rotatable aspect plate, adjacent to and beneath the stationary aspect plate, suspended on the vertical pivot and free to rotate about it in a complete 360 degree circle;

means for latching the rotatable aspect plate to one of the recesses in the stationary aspect plate for holding the chair in the desired aspect;

a chair support mounted to the rotatable aspect plate, above and well clear of head of the signpainter, and extending downwardly at an angle with the vertical to a point behind the seated worker at level of his head, thence vertically downward along the chair back, thence horizontally forward under the chair seat which is mounted on the chair support at such a location that centers of gravity of the chair and of the seated worker are vertically beneath the horizontal pivot when the chair is suspended in a normal position thus providing a stable suspension of the worker;

a foot rest support mounted to the chair support and extending downward to a point beneath from of the chair seat at foot level of the seated worker; and

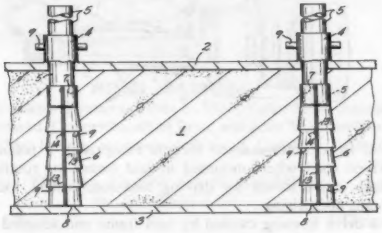
a foot rest mounted horizontally at bottom of the foot rest support and beneath the front of the chair seat, and an aspect ring mounted to the stationary aspect plate, extending outward from the plate at a lower elevation than the plate, above and clear of the signpainter's head but within convenient reach of his hand when changing the aspect of the chair about the vertical pivot.

4,195,709

STEP ASSEMBLY FOR CAST STRUCTURES AND METHOD OF INSTALLATION

Jerome R. Gianotti, 7236 SE. Reed College Pl., and Thomas J. Hughes, 7535 SE. Reed College Pl., both of Portland, Oreg. 97202

Filed Nov. 6, 1978, Ser. No. 958,173
Int. Cl.[2] E04G 15/04; E06C 9/04
U.S. Cl. 182—90 **11 Claims**



1. A step assembly for installation within a concrete wall structure, said step assembly comprising,

a pair of receptacles for embedment within the wall structure, each receptacle having yieldable internal multiple abutments facing in one direction, said internal abutments terminating inwardly in shoulders,

a step having arms for receptacle insertion, each of said arms having multiple external abutments facing in an opposite direction to said receptacle abutments, and

said external abutments having peripheral edges adapted for passage past said shoulders during arm insertion and thereafter adapted for abutment during attempted arm extraction whereby the arm and step are secured in plce within the wall.

4,195,710

OIL DRAIN SYSTEM

Ward S. Garrison, P.O. Box 1773, Sedona, Ariz. 86336

Filed Sep. 29, 1978, Ser. No. 947,260
Int. Cl.[2] F16N *33/00*; B65B *3/06*
U.S. Cl. 184—1.5 **10 Claims**

4. An oil drain system for use in receiving and containing oil drained from a motor vehicle comprising:

(a) a collection receptacle having integral top wall, bottom wall, side walls and end walls defining an elongate chamber, said receptacle being of a shape and size that the receptacle may selectively rest on each of the bottom and one end wall;

(b) said receptacle having a tubular member at the other end wall defining a fill opening therefor;

(c) a closure cap removably mounted on said tubular member for closing said fill opening;

(d) a funnel member connected to the receptacle said one end wall and selectively movable to extend outwardly and upwardly relative to said other end wall and positionable under a drain opening of a motor crankcase;

(e) said funnel member having a frame including side members and an end member remote from said tubular member;

(f) a flexible member having edges connected to the frame side and end members and an end adjacent the tubular member extending into said tubular member providing a trough for flow of oil to the receptacle;

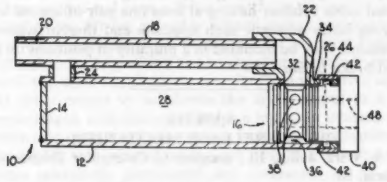
(g) means connected between said frame member and the receptacle to position said frame member at a level above the tubular member for flow of oil caught by the flexible member into the receptacle.

4,195,711

DEVICE FOR DOSING A FLOWING FLUID STREAM WITH AN ADDITIVE

Thomas G. E. Bartlett, Alberton, South Africa, assignor to Castrol South Africa (Proprietary) Limited, Johannesburg, South Africa

Filed Sep. 6, 1978, Ser. No. 939,962
Claims priority, application South Africa, Sep. 26, 1977, 77/5632
Int. Cl.[2] F16N *7/30*
U.S. Cl. 184—55 A **11 Claims**



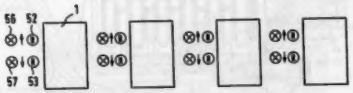
1. A device for dosing a flowing fluid stream with an additive, the device comprising an elongated body closed at one end and open at the other, first and second lateral inlets to the body, the first lateral inlet being closer to the closed end of the body than the second lateral inlet, means defining a fluid flow path which path enters said body through said second inlet and which is further connected to said body via said first lateral inlet, and a plug inserted into said body through said open end thereof, there being sealing means which co-operate with said body and said plug to divide said body into a first chamber communicating with said first inlet and a second chamber communicating with said second inlet, the plug having a bore which passes therethrough, said bore placing the first chamber in communication with the exterior of the body and there being at least one passage in said plug placing said bore in communication with said second chamber.

4,195,712

CONTROL SYSTEM FOR A PLURALITY OF ELEVATORS

Eberhard Kühl, Riedstrasse 16, 6500 Mainz, Fed. Rep. of Germany

Filed Apr. 20, 1978, Ser. No. 898,181
Claims priority, application Fed. Rep. of Germany, Apr. 25, 1977, 2718300
Int. Cl.[2] B66B *3/00*
U.S. Cl. 187—29 R **5 Claims**



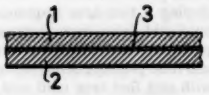
1. A control system for a plurality of elevators located close to one another and controlled independently, comprising: call buttons, one for each elevator door on each floor; and means for preventing said call buttons from being operative for a predetermined time interval after any one of said call buttons has been actuated; a time-delay relay an an auxiliary relay connected as interrupter; elevator controls associated with said call buttons; a call line; each call button comprising a parallel contact connected, on one hand, via said time relay and, on the other hand, directly to said auxiliary relay to the associated elevator control by said call line.

4,195,713

SANDWICH STRUCTURES WITH PARTIAL DAMPING LAYERS

Gunnar I. Haghjer, Malmö, and Odd B. Sylwan, Stockholm, both of Sweden, assignors to Reduc Acoustics AB, Perstorp, Sweden

Continuation of Ser. No. 820,334, Jul. 29, 1977, abandoned, which is a continuation of Ser. No. 700,070, Jun. 28, 1976, abandoned, which is a continuation of Ser. No. 579,583, May 21, 1975, abandoned. This application Sep. 18, 1978, Ser. No. 943,227
Claims priority, application Sweden, May 30, 1974, 7407074
Int. Cl.[2] F16F *7/10*
U.S. Cl. 188—1 B **5 Claims**



1. A damped composite structure including:

two rigid structural parts, at least one of the structure parts having a continuous surface facing the other part,

a plurality of spaced, discrete energy absorbing units of a viscoelastic material having a loss factor greater than 0.50, each of said units adhering to the facing surfaces of the structural parts and together forming a thin discontinuous

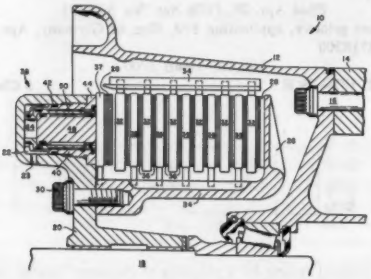
layer of viscoelastic material having a thickness ranging from about 0.10 to 2.0 millimeters, the greatest distance between the units being less than the bending wavelength for the highest frequency to be damped, wherein the viscoelastic material absorbs energy when subjected to shearing due to relative lengthwise movement between the structural parts when subjected to bending waves.

4,195,714

PISTON AND EXTENSIBLE CYLINDER THEREFOR

Lyle E. Massing, South Bend, Ill., assignor to The Bendix Corporation, Southfield, Mich.

Filed Aug. 22, 1977, Ser. No. 826,606
Int. Cl.[2] F16D *55/40, 65/74*
U.S. Cl. 188—71.5 **6 Claims**



1. In an aircraft multiple disc brake assembly having a set of rotors mounted for rotation with a member to be braked, a set of stator members mounted on a torque-absorbing member and adapted to engage said rotor members to effect a brake application, extendible piston means secured to said torque-absorbing member for urging said rotor members and said stator members into braking engagement and adapted to compensate for wear of said rotor and stator members, said piston means including a casing with an open end and a closed end defining a cavity therewithin, passage means through which a controlled source of fluid pressure is communicated into said cavity for effecting a brake application, a sleeve slidable within said cavity in response to said fluid pressure, a piston member slidable within said sleeve in response to said fluid pressure to urge said rotor and stator members into braking engagement, and coupling means engageable with said sleeve and said piston member for coupling said sleeve to said piston member so that said sleeve moves with said piston member when said piston member moves more than a given axial distance relative to said sleeve and away from said closed end, said sleeve moving with said piston member to allow further axial movement of said piston member away from said closed end, the improvement wherein:

said sleeve includes a differential pressure responsive area responsive to said fluid pressure to prevent the movement of said sleeve away from said closed end until said sleeve is coupled to said piston member;

said sleeve including a first area responsive to said fluid pressure to move said sleeve away from said closed end to an extended position wherein said sleeve engages a stop on said casing, said fluid pressure being prevented from communicating with said first area until said sleeve moves a predetermined distance away from said closed end, said sleeve being retained in said extended position by said fluid pressure;

said piston means including sealing means for preventing communication of said fluid pressure with said first area until said sleeve moves said predetermined distance away from said closed end;

upon application of said brake, said fluid pressure acting upon said piston member and said differential area to move said piston member relative to said sleeve and away from said closed end until said piston member engages said coupling means;

whereupon said fluid pressure acts upon said piston member and overcomes said fluid pressure acting upon said differential area to move said piston member and said sleeve away from said closed end until said sleeve moves said predetermined distance away from said closed end;

whereupon said fluid pressure continues to act upon said piston member and said first area to overcome said fluid pressure acting upon said differential area and to further move said piston member and said sleeve away from said closed end to extend said piston means to compensate for wear of said rotor and stator members; and

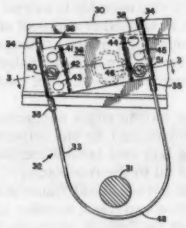
said sleeve including one section with smaller inside and outside diameter portions and an other section with larger inside and outside diameter portions, said outside diameter portions cooperating to define a radial surface portion therebetween defining said first area.

4,195,715

ADJUSTABLE SUPPORT FOR BOTTOM BRAKE CONNECTING RODS FOR RAILWAY CARS

Rudolph E. Nadherny, Naperville, Ill., assignor to Illinois Railway Equipment Company, Chicago, Ill.

Filed Oct. 16, 1978, Ser. No. 951,619
Int. Cl.[2] F16D *65/00*
U.S. Cl. 188—210 **8 Claims**



1. For combination with a railway car having spaced apart brake beams and a bottom connecting rod disposed on the underside thereof forming part of a brake rigging and likely to become detached and drop to the road bed, safety means for preventing said bottom connecting rod from so dropping, comprising: a flexible cable for underlying said bottom connecting rod with the ends extending upwardly on opposite sides of said connecting rod and a one-piece cable retainer having elongated generally parallel, cable-retaining passageways extending along opposite ends thereof, each end of said cable extending generally upwardly through one of said passageways, stop means secured to each end of said cable and serving to prevent the cable end from being drawn downwardly through said passageway through which it extends, and said cable retainer having at least one pair of spaced bolt-receiving holes adjacent each opposite end thereof whereby said retainer may be mounted in a plurality of positions on one of said brake beams.

4,195,716

BRAKE RELEASE MECHANISM

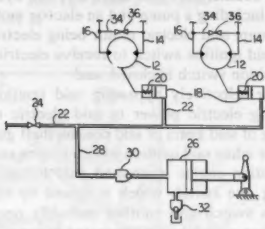
Leon A. Wirt, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Continuation of Ser. No. 714,427, Aug. 13, 1976, abandoned. This application Jun. 19, 1978, Ser. No. 917,213
Int. Cl.[2] B60K *41/20*
U.S. Cl. 192—3 R **6 Claims**

1. In a vehicle having a hydraulic fluid drive motor, a spring applied brake associated with said drive motor and releasable by hydraulic fluid pressure, and pressurized hydraulic system

means for communicating fluid pressure to said brake to release said brake, the improvement comprising auxiliary brake release means for releasing said brake, said auxiliary brake release means including:

(a) a manual cut-off valve connected between said brake and said pressurized hydraulic system means;



(b) auxiliary conduit means, connected between said cut-off valve and said brake, for communicating fluid pressure with said brake; and

(c) manual hydraulic pump means for pumping fluid through said auxiliary conduit means to said brake.

4,195,717

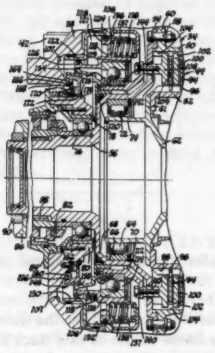
CLUTCH AND BRAKE MECHANISM

James R. Williams, Martinsville, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 27, 1977, Ser. No. 864,856

Int. Cl.[2] F16D *67/04, 25/08*

U.S. Cl. 192—18 A **2 Claims**



1. A clutch and brake unit for association with an engine driven lift fan assembly to control power transfer from the engine to the lift fan assembly comprising: an outer housing with an output end case, a drive input from the engine, a drive output to the lift fan assembly, clutch means coupled to said drive input and said drive output having a clutch applicator with a disengaged position and an engaged position to produce clutch slip upon initial power transfer from said drive input to said drive output to accelerate the drive output to a speed synchronized with that of said drive input, an inboard cavity within said output end case, means including a hydraulic operator within said inboard cavity and including a reciprocating piston selectively pressurized and connected by an axially movable thrust bearing and bearing carriage to the clutch applicator to position said clutch means in its engaged position, means including return springs outboard of said clutch applicator and in engagement with said piston for returning said piston when said operator is depressurized thereby to position said clutch means in its disengaged position, and a drive output brake located within said inboard cavity including a rotatable brake member secured to said drive output by said bearing carriage for rotation therewith, a nonrotatable reaction brake member secured to said end case radially inwardly of and axially positioned with respect to said rotatable brake member, said rotatable brake member being located radially inwardly of said piston and being axially movable by said piston out of engagement with said reaction brake member when said clutch means is engaged, means including said piston return spring for biasing said rotatable brake member into engagement with said reaction brake member when said operator is depressurized to brake said drive output when the clutch is disengaged thereby to prevent free wheeling of the fan lift assembly.

4,195,718

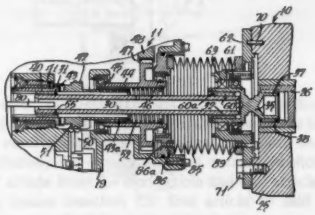
RETRACTABLE SHAFT STRUCTURE

James S. Schmohe, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Mar. 31, 1978, Ser. No. 892,133

Int. Cl.[2] F16D *11/04, 13/74, 47/02*

U.S. Cl. 192—67 R **14 Claims**



1. A retractable shaft structure for interconnecting a constant speed drive unit and an engine gearbox wherein said unit has a housing and an input drive axis and the gearbox has an output drive axis and said unit is moved transverse to said axes to bring the axes into alignment comprising, a drive shaft rotatable about said input drive axis and carried by said unit and having a drive input end extending beyond said unit for connection into driving relation with an output shaft of the gearbox, means within the unit housing mounting said drive shaft for adjusting movement along the input drive axis, means external of the unit housing rotatably mounting the drive input end of the input shaft and held in fixed relation therewith for movement relative to the housing in said adjusting movement of the drive shaft, and means for releasably holding the rotatable mounting means in rigid relation with said gearbox.

4,195,719

CONSTRUCTION OF FRICTION CLUTCHES

Cecilio Corral Martinez, Murcia, Spain, assignor to Francisco Montoro Munoz, Madrid, Spain

Filed Oct. 27, 1977, Ser. No. 845,805

Claims priority, application Spain, Jul. 19, 1977, 460,871

Int. Cl.[2] F16D *13/50*

U.S. Cl. 192—89 B **2 Claims**

1. An improved friction clutch of the type that includes:

a flywheel solidly joined to a crankshaft so as to rotate therewith;

a casing fixed to the flywheel;

a disc coaxially keyed to a mainshaft;

pressure plate means for moving said disc into disengageable contact with said flywheel;

diaphragm means for biasing said pressure plate means towards said flywheel in a first position wherein said diaphragm means is:

(a) located between said pressure plate means and said casing;

(b) in contact with said pressure plate means; and

(c) fastened to said casing;

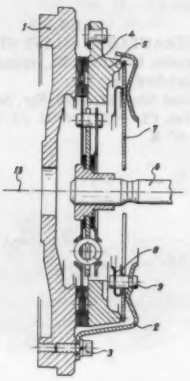
first riveting means for fastening said diaphragm means to said casing, comprising a plurality of rivet members having a portion thereof projecting inwardly toward said pressure plate;

wherein said improvement comprises:

a second means for fastening said diaphragm means to said casing including:

(a) an annular piece located between said diaphragm means and said pressure plate means, including orifice means for receiving said rivet members; and

(b) a portion of said annular piece comprising an elastic



hollow and incomplete toroidel fold means for elastically supporting said diaphragm means independently of said first riveting means wherein said fold means subtends an angle of more than 180°, contacts with said diaphragm means and is composed of an elastically deformable material providing means for reversibly reducing a height of said fold means; and

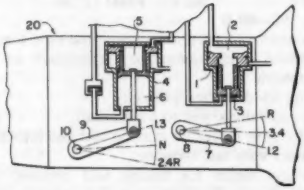
wherein said annular piece further includes means for resisting flexion between consecutive orifice means comprising flange means for providing a high moment of inertia generally near an inner circumference of said annular piece.

4,195,720

COUNTER SHAFT AUTOMATIC POWER TRANSMISSION

Keizaburo Usui, and Isao Hayama, both of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jul. 19, 1977, Ser. No. 817,095
Claims priority, application Japan, Jul. 20, 1976, 51-86969
Int. Cl.[2] F04B *49/00*; B60K *29/00*
U.S. Cl. 192—0.092 **5 Claims**



1. An automatic countershaft power transmission for an automotive vehicle, said automotive vehicle being equipped with an internal combustion engine and an ignition switch, said automatic countershaft power transmission comprising:

a clutch assembly operatively connected to said internal combustion engine;

a countershaft gear assembly operatively connected to said clutch assembly;

hydraulic control means operatively connected to said countershaft gear assembly for selectively engaging the gears of said countershaft gear assembly, said hydraulic control means including a pump and an electric motor for driving said pump, said electric motor being electrically coupled with said ignition switch to receive electric power when the ignition switch is closed; and

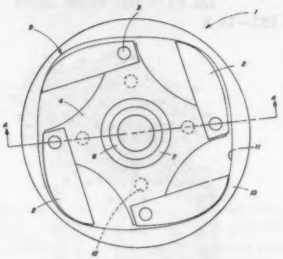
means for selectively bypassing said ignition switch and directing electric power to said electric motor so that shifting of said gears of said countershaft gear assembly is possible when said ignition switch is open and said internal combustion engine is stopped, said bypassing means including one switch which is closed by opening of the ignition switch and another manually operated switch, said other switch being connected in series with said one switch.

4,195,721

TORQUE EXCHANGE COUPLING

Robert H. Shea, Bergen, N.Y., assignor to Shea Inventive Designs, Inc., Rochester, N.Y.

Continuation-in-part of Ser. No. 652,206, Jan. 26, 1976, abandoned. This application Jan. 6, 1977, Ser. No. 757,249
Int. Cl.[2] F16D *43/14, 21/08*
U.S. Cl. 192—105 CD **9 Claims**



1. A coupling for transmitting rotational mechanical power comprising:

(a) a housing having an inner surface;

(b) a circuitous track situated on the inner surface of the housing, the linear course of said track being undulant in relation to its axis of rotation and said track comprising alternate first and second curved surfaces having relatively large and small radius of curvature defining minor and major arches respectively;

(c) a rotor situated interiorally to the circuitous track; and

(d) a centrifugally extendible rider arm comprising a single unitary component having a first end portion and a second end portion and a smooth, curved, uninterrupted planar surface rigidly fixed on said two end portions wherein:

(1) the first end portion is pivotally attached to said rotor,

(2) the second end portion is unattached and free to oscillate,

(3) the smooth, curved, uninterrupted planar surface is capable of making oscillatory contact with the undulant track at any point in its linear course, and

(4) the radius of curvature of the curved surface on said first end portion being substantially the same as the radius of curvature of said first curved surface of the track, and the radius of curvature of the curved surface on said second end portion being substantially the same as the radius of curvature of said second curved surface on the track.

4,195,722

CIRCUIT FOR A POWER OPERATED MACHINE

Larry L. Anderson, Mequon, Wis.; Lawrence W. Shumaker, Winthrop Harbor, Ill., and Russell J. Van Rens, Milwaukee, Wis., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Apr. 19, 1978, Ser. No. 897,855
Int. Cl.[2] F16P *3/06, 3/20*
U.S. Cl. 192—131 R 12 Claims

1. A circuit interconnecting a source of electrical energy with a power operated machine, said circuit comprising interlock means including motion switching means which is adapted to be removably attached to the machine operator's body and is movable between a normally deactivated position to prevent the flow of electrical energy from the source to the machine and an activated position to permit the flow of electrical energy from the source to the machine for operating the machine, said motion switching means being operable to be moved to the activated position in response to movement of the operator's body, and said interlock means further including motion switch timing means operable, in response to movement of said motion switching means to the activated position, to permit the flow of electrical energy from the source to the machine for a predetermined time interval after said motion switching means has been moved to the activated position, said motion switch timing means including adjusting means for adjusting the predetermined time interval of said motion switch timing means.

4,195,723

CONVEYOR SYSTEM WITH ARTICLE SEPARATOR

Horst Loewenthal, Tiengen, Fed. Rep. of Germany, assignor to SIG - Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland

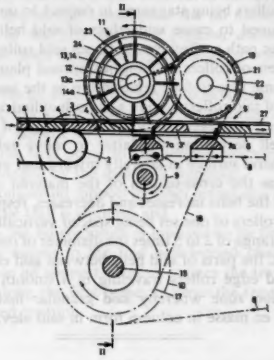
Filed Sep. 5, 1978, Ser. No. 939,114
Claims priority, application Switzerland, Sep. 5, 1977, 10813/77
Int. Cl.[2] B65G *47/31*
U.S. Cl. 198—461 7 Claims

1. In a conveyor system including a first conveyor for advancing serially arranged, contacting articles; a second conveyor adjoining a downstream end of the first conveyor and including spaced article pusher means for advancing the articles individually or groupwise spaced from one another; a circulating article advancing device for separating individual articles or article groups from the article series on the first conveyor and transferring the individual articles or article groups from the first conveyor to the second conveyor; and means for synchronizing the motion of the circulating article advancing device with the motion of the article pusher means of the second conveyor for effecting a take-over of the conveyance of the transferred articles by the article pusher means from the circulating article advancing device; the improvement in said circulating article advancing device comprising

(a) article abutting means arranged to engage into a gap between a first article to be transferred and a second adjoining article contacting the first article;

(b) article accelerating means arranged to engage into said gap; and

(c) drive means for driving said article abutting means with a speed corresponding at least approximately to that of said first conveyor and for driving said article accelerating means with a speed greater than that of said article abutting means; said drive means including synchronizing means for introducing said article abutting means and said article accelerating means simultaneously into the same gap, whereby the article abutting means withholds the second article from the first article and said article accelerating means transfers the first article to said article pusher means of said second conveyor.

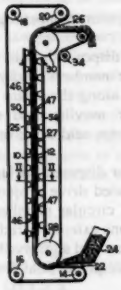


4,195,724

BELT ELEVATOR WITH STAGGERED EDGE ROLLERS

Anthony D. Janitsch, Belleville, Canada, assignor to Allis-Chalmers Canada Limited, Lachine, Canada

Continuation-in-part of Ser. No. 702,633, Jul. 6, 1976, abandoned, which is a continuation of Ser. No. 564,432, Apr. 2, 1975, abandoned. This application Jan. 7, 1977, Ser. No. 757,680
Int. Cl.[2] B65G *15/14*
U.S. Cl. 198—626 6 Claims



1. Bulk material handling apparatus especially adaptable for conveying a variable volume of granular material from one level to another comprising:

a pair of flexible endless conveyor belts arranged to have the belts in a change of elevation zone in face-to-face relationship presenting flat belt edges in engagement with one another;

drive means for moving the belts at the same speed; and

mechanical means engaging the respective edges of the belts in said change of elevation zone to maintain said edges in

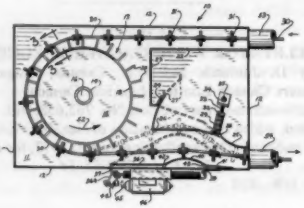
abutting relationship and to thereby substantially eliminate spillage of material being transported from between said belts, said mechanical means including sets of edge rollers of predetermined diameter at each side of said belts engaging said edges of said belts in said change of elevation zone and serving as substantially the sole positioning and supporting means for said belts in said elevation zone, said rollers being staggered in respect to one another and positioned to cause said edges of said belts to follow a sinuous path as they pass between said rollers, the axes of said sets of rollers defining juxtaposed planes oriented in the same face-to-face relationship as the associated belts, each of said rollers having a smooth cylindrical peripheral surface in engagement with the flat edge of the confronting belt permitting the latter to move relative to said peripheral surface in laterally inward and outward directions as the cross-section of the material conveyed between the belts increases and decreases, respectively, said edge rollers of one set being spaced vertically at intervals in the range of 2 to 5 times the diameter of one of said edge rollers, the parts of said belts between said edges engaged by said edge rollers traveling in a smooth path in said elevation zone whereby said granular material is conveyed en masse in column form in said elevation zone.

4,195,725

DRIVE UNIT FOR CABLE CONVEYOR

Robert D. Jones, Oskaloosa, Iowa, assignor to Intraco, Inc., Oskaloosa, Iowa

Filed May 18, 1978, Ser. No. 907,136
Int. Cl.[2] B65G *19/14*
U.S. Cl. 198—718 **5 Claims**



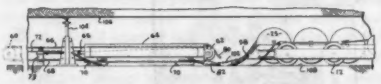
1. A conveyor system comprising:
a tube;
an endless cable disposed in said tube;
a plurality of disc members rigidly attached to said cable and evenly spaced along the entire length of said cable;
drive means for moving said cable and disc members through said tube, said drive means including:
a housing;
a circular member disposed within said housing;
a plurality of spaced drive projections attached at one end thereof to said circular member at spaced intervals, said drive projections extending radially outwardly from said circular members and a groove being disposed in the other end of said drive projections for reception of a portion of the cable;
a cable tightening means attached to said housing for taking slack out of said cable, said cable tightening means including a lever member pivotally attached to said housing and means for biasing said lever member towards said cable;
a moveable wall pivotally attached to said housing on the opposite side of said cable from said lever member and biasing means for biasing said moveable wall towards said cable whereby material being conveyed will be channelled between the lever member and the moveable wall thereby preventing material being conveyed from accumulating in said housing.

4,195,726

METHOD AND APPARATUS FOR EXTENDING CONVEYOR BELTS

John L. Denny, Beckley, W. Va., and Robert H. Alley, Bluefield, Va., assignors to Advance Mining Products, Inc., Falls Mills, Va.

Filed Aug. 17, 1978, Ser. No. 934,598
Int. Cl.[2] B65G *21/14*
U.S. Cl. 198—812 **20 Claims**



1. A method of increasing by a predetermined distance the length of a closed loop conveyor belt having upper and lower flights extending between a tailpiece roller supported on tailpiece means at its loading end and a headpiece roller at its discharge end, said method comprising the steps of:
(a) separating said closed loop belt to provide an upper old belt end and a lower old belt end adjacent the tailpiece roller;
(b) providing a double thickness of new belting formed in a roll wound onto a portable support means with said double thickness of new belting being of a length equal the predetermined distance that the conveyor belt is to be extended and with said double thickness of new belting comprising a single piece of new belting folded at its midpoint which comprises the inner extent of said roll with the new belt ends of said single piece of belting being in the outermost portion of said roll;
(c) positioning said portable support means adjacent and forward of the tailpiece roller;
(d) connecting the new belt ends to the upper and lower old belt ends to provide a new closed loop of belting with the tailpiece roller being within the confines of said new closed loop;
(e) unrolling said roll and moving the tailpiece roller forwardly to a new position which is determined by the extent that the new belt loop permits forward movement of the tailpiece roller; and
(f) fixedly anchoring said tailpiece roller in said new position.

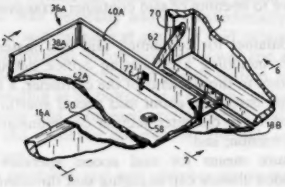
14. A method of increasing the length of a closed loop conveyor belt having upper and lower flights extending between and mounted on a tailpiece roller supported on tailpiece means at its loading end and a headpiece roller at its discharge end, said method including the steps of:
(a) separating said closed loop belt to provide an upper old belt end and a lower old belt end adjacent the tailpiece roller;
(b) providing new belting supported for unreeling on a portable support means;
(c) positioning said portable support means adjacent and forward of the tailpiece roller;
(d) connecting a first new belt end to the upper old belt end and connecting a second new belt end to the lower old belt end; and
(e) moving said portable support means forwardly to effect unreeling of said new belting to simultaneously provide an upper flight of new belting extending coextensively with the upper flight of old belt material and a lower flight of new belting extending coextensively with the lower flight of old material with the tailpiece roller being positioned between the upper and lower flights of new belting.

4,195,727

DISPLAY CASE FOR JEWELS

Joseph E. Mele, Port Washington, N.Y., assignor to Mele Manufacturing Co., Utica, N.Y.

Filed Feb. 14, 1979, Ser. No. 12,152
Int. Cl.[2] B65D *85/00*; A45C *5/12*; A47B *77/18*
U.S. Cl. 206—45 **4 Claims**



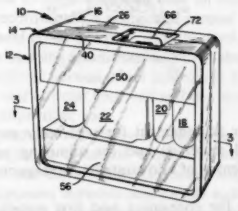
1. A display case for jewels, which comprises:
(a) a box enclosure which comprises:
(i) a first pair of opposed sidewalls;
(ii) a second pair of opposed sidewalls positioned between and joining the first pair;
(iii) a closed bottom end; and
(iv) an open top end;
said sidewalls with the top and bottom ends defining a first chamber for receiving jewels;
(b) a lid enclosure adapted to close the open end of the box enclosure and which comprises:
(i) a third pair of opposed sidewalls;
(ii) a fourth pair of opposed sidewalls positioned between and joining the third pair;
(iii) a closed top end; and
(iv) an open bottom end;
said third and fourth pairs of sidewalls with the lid enclosure top and bottom ends defining a second chamber;
said lid enclosure being hingedly mounted on the top end of the box enclosure so that when in a first position the bottom end of the lid enclosure is closed by the box enclosure and the top end of the box enclosure is closed by the lid enclosure with the first chamber in open communication with the second chamber and when in a second position the bottom end of the lid enclosure is open for access to the second chamber and the top end of the box enclosure is open for access to the first chamber;
(c) a jewel display tray adapted to nest within the second chamber and which comprises:
(i) a fifth pair of opposed sidewalls;
(ii) a sixth pair of opposed sidewalls positioned between and joining the fifth pair;
(iii) an open top end; and
(iv) a closed bottom end;
said tray having a first plane parallel with the closed bottom end of the tray and a second plane perpendicular to the first plane;
(d) means for mounting said tray so that the tray eccentrically rotates above one of said first pair of opposed sidewalls, on the open top end of the box enclosure, about an axis parallel to the second plane,
said tray having a first mounted position above the first chamber wherein the second plane is vertically aligned with the second chamber and a second mounted position wherein the tray shifts outwardly from the top end of the box enclosure along the first plane so that the second plane is only partially vertically aligned with the second chamber;
(e) an elongate lid support member having a first end, a second end and a shank joining the ends thereof, the first member end being pivotally connected to the inner surface of one of the third pair of opposed sidewalls of the lid enclosure, the second member end being pivotally connected to one of the sixth pair of opposed sidewalls of the tray and the connections to said lid enclosure and tray being of a character permitting partial rotation of the shank in a direction about the axis of the shank; and
(f) means of stopping said tray from eccentrically rotating more than about 90° about the axis parallel to the second plane; whereby
(1) when the lid enclosure is in its first position closing the open top end of the box enclosure, the tray is nested within the second chamber of the lid enclosure, positioned in the first mounted position above the first chamber with the second plane aligned with the first chamber;
(2) when the lid enclosure is raised to its second position to open access to the first and second chambers, the elongate lid support member rotates the tray eccentrically along the first plane to the second mounted position until stopped by the means of stopping;
(3) the elongate lid support member serves as a lid support when the tray is stopped; and
(4) when the lid enclosure is lowered to its first position closing access to the first and second chambers, the elongate lid support member rotates the tray eccentrically along the first plane to move the tray to its first mounted position.

4,195,728

PACKAGING SYSTEMS

Tom Cardamone, New York, N.Y., assignor to Keyline Research & Development Corp., Rutherford, N.J.

Filed May 31, 1978, Ser. No. 911,160
Int. Cl.[2] B65D *25/28, 65/18*
U.S. Cl. 206—45.33 **7 Claims**



1. A packaging system comprising: an assemblage of a receptacle including abutted front and rear members configured to provide a hollow enclosure completely surrounded by portions of said front and rear members; a liquid tight container disposed in said enclosure, said container including a handle and there being an aperture in said receptacle through which said handle can be reached, whereby said assemblage can be carried by the handle of said container, and means uniting said front and rear members which is rupturable to make said members separable and thereby make the container removable from the receptacle.

4,195,729

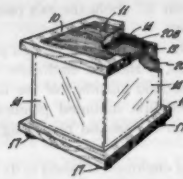
COMBINED PHOTOGRAPH HOLDER AND STORAGE DEVICE

John A. Macken, 4039 Shadow Hill Dr., Santa Rosa, Calif. 95404

Filed Jan. 12, 1979, Ser. No. 2,852
Int. Cl.[2] B65D *25/00, 25/54*
U.S. Cl. 206—45.34 **10 Claims**

1. A combined storage and display devise comprising:
a first box structure open at the top thereof and having four sides and a bottom formed of transparent materials;
a second box structure, open at the top thereof and having four sides and a bottom, inserted into said first box structure with a narrow space therebetween for placement

between said first and second structure of photographs or the like to be viewed through said first box structure and



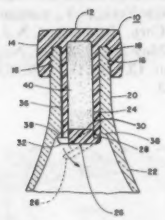
lid means adapted to fit snugly in the open top of said second box and overlay the top of said first box to thereby close both of said first and second box structures.

4,195,730

CONTAINER HAVING SEPARATE STORAGE FACILITIES FOR TWO MATERIALS

Guilbert M. Hunt, Brecksville, Ohio, assignor to General Foods Corporation, White Plains, N.Y.

Filed Jun. 20, 1978, Ser. No. 917,324
Int. Cl.[2] B65D *39/08, 81/32*
U.S. Cl. 206—221 **5 Claims**



1. A container arrangement for separately storing at least first and second materials and for admixing said materials responsive to opening of said container arrangement, comprising:

a. a container for containing said first material, said container including a dispensing orifice defining an access aperture to the contents of the container, a threaded neck section extending about said access aperture, and an enlarged inner diameter section communicating with said neck section;

b. closure means for said access aperture, said closure means being a threaded closure cap engageable with said threaded neck section for screwing onto or off said container, a compartment associated with said closure means for containing said second material, said compartment extending through said neck section into the enlarged diameter section of said container, said compartment including a hinged end wall portion for normally closing an opening communicating the interior of said compartment with said container, and said closure means including means for releasing the second material from said compartment into the first material in the container responsive to rotational movement of said closure means relative to said container, including said hinged wall portion being located in said enlarged diameter container section and having a radially protruding extension projecting into said container section beyond the radial dimensions of the neck section thereof, said radially protruding extension comprising two resiliently yieldable lip portions having a gap therebetween, said lip portions being bendable towards each other into said gap to facilitate said compartment being inserted into the neck of the container and to spread apart in said enlarged diameter section thereof upon sealing of said container with said closure cap whereby, responsive to unscrewing of said closure cap from said container, said extension will engage the inner wall surface of said neck portion so as to pivot said hinged wall portion and release the material in said compartment into the material in said container.

3. A container arrangement for separately storing at least first and second materials and for admixing said materials responsive to opening of said container arrangement, comprising:

a. a container for containing said first material, said container including a dispensing orifice defining an access aperture to the contents of the container, a threaded neck section extending about said access aperture, and an enlarged inner diameter section communicating with said neck section; and

b. closure means for said access aperture including a threaded closure cap engaging said threaded neck section for screwing onto or off said container, a substantially cylindrically shaped compartment associated with said closure means for containing said second material, said compartment being formed of a frangible material and depending into said container neck section, said compartment also having its upper edge fastened to the rim of said container neck section so as to be stationary relative to said container, said upper edge of the compartment being intermittently fastened to the rim of said container neck section to provide vent apertures equalizing the pressure within and externally of said container responsive to unscrewing of said closure means, the other end of said compartment within said container being an oblique end wall relative to said neck section, and said closure means including means for releasing the second material from said compartment into the first material in the container responsive to rotational movement of said closure means relative to said container, including a piercing element fastened to said closure cap for rotation therewith, said piercing element extending into said compartment and being eccentrically offset from the axis of rotation of said closure cap whereby rotation of said closure cap through a predetermined angle for opening said container causes said piercing member to rupture said oblique end wall of said compartment releasing the material contained therein into the material contained in said container.

4,195,731

DEVICE FOR CONTAINING A SUBSTANCE TO BE MIXED WITH ANOTHER SUBSTANCE IN A VIAL

Claudio Cavazza, via Marocco 35, Rome, Italy

Filed Jun. 29, 1978, Ser. No. 920,330
Claims priority, application Italy, Apr. 27, 1978, 22764 A/78
Int. Cl.[2] B65D *25/08*
U.S. Cl. 206—222 **1 Claim**

1. A device for containing a substance and adapted for releasing the substance into a vial containing another substance comprising;

a cylindrical substance container adapted to be supported on and enclose a top opening of the vial having a cylindrical

space defined therein and including a top flange portion engageable around the top of the vial;

a closing bottom connected to the bottom of said substance container for closing the bottom of said cylindrical space to contain the substance therein, said connection between said closing bottom and said container being substantially circular and including one weakened section at a selected circumferential location of the connection;

a substantially cylindrical hollow piercing piston having a top cover wall vertically and circumferentially slidably engaged in said cylindrical space of said substance container, said piercing piston having a lower end extending in an angle with respect to said closing bottom, said lower end terminating at its bottom in a piercing point adapted for breaking said weakened section when said piercing piston is slid vertically downwardly through said weakened section;

one of said container and said piercing piston including a groove facing the other of said container and said piercing piston having at least one circumferentially extending portion and at least one vertically extending portion; and

a projection defined on the other of said containers and piercing piston engaged with said groove for confining the circumferential and vertical sliding of said piercing piston with respect to said substance container;

one of said projection and said vertical portion of said groove aligned with said weakened section so that said piercing piston is slidable circumferentially to align said piercing point with said weakened section and, thereafter, slidable vertically to pierce said weakened section and release the substance within said substance container into the vial.

4,195,732

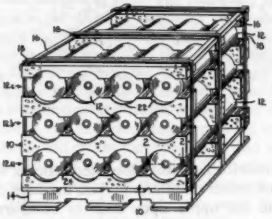
SUPPORTING AND SPACING MEMBER FOR WEB MATERIAL ROLLS

Norman H. Bell, Hortonville, Wis., assignor to Great Northern Corporation and Presto Products, Inc., both of Appleton, Wis.

Filed Feb. 28, 1978, Ser. No. 882,254

Int. Cl.[2] B65D *85/67, 85/62, 81/06, 19/44*

U.S. Cl. 206—391 **4 Claims**



1. A structure for protectively supporting and spacing rolls of web material in a multi-layer stack, comprising an elongated bar of expanded foam material having a pair of opposed surfaces, a first of said surfaces having a plurality of spaced parallel generally semi-cylindrical indentations disposed to receive rolls of web material, the radius of each of said semi-cylindrical indentations being greater than the depth of said indentation, whereby the rolls will be snuggly retained within indentations in a pair of said bars and the bars will be out of contact with each other, said bar having a plurality of recesses located in the side portions of said indentations to provide a greater flexural cushioning by said bars when clamped to said rolls.

4,195,733

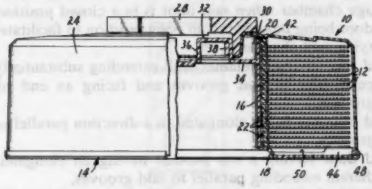
SHIPPING AND STORAGE CONTAINER

Allen J. Abel, Roseville, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jul. 31, 1978, Ser. No. 929,577

Int. Cl.[2] G11B *1/02, 25/04;* **B65D** *85/02, 85/30*

U.S. Cl. 206—444 **4 Claims**



1. A shipping and storage container for a plurality of magnetic recording discs having central openings, said container comprising:

a base including a cylindrical portion having a peripheral surface adapted for close fitting engagement within the openings of said recording discs and a radially extending circular end wall at a first end of said cylindrical portion, a second end of said cylindrical portion opposite said first end being unrestricted to afford positioning said recording discs around said peripheral surface;

a plurality of annular spacing rings adapted to be positioned around said peripheral surface and between adjacent recording discs;

a cover comprising a wall adapted for engagement between said circular end wall and the second end of said cylindrical portion to form with said base an annular cavity receiving recording discs positioned around said cylindrical portion, said cover having a central portion with at least one latch opening positioned adjacent the second end of said cylindrical portion when said cover is in engagement between said circular end wall and the second end of said cylindrical portion; and

means adapted for releasably attaching said cover to said base comprising a handle shaped to engage the outer surface of said cover, and cam means adapted for releasable engagement between said handle and the second end of said cylindrical portion through said latch opening.

4,195,734

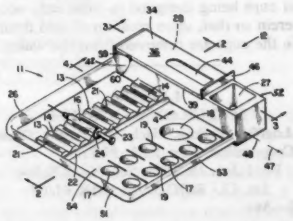
APPARATUS FOR TRANSPORTING MEDICATIONS OR THE LIKE

John O. Boner, 327 Highland Dr., Greenwood, Ind. 46142; David N. Lasiter, 7610 Singleton, and Joseph H. Wilson, 5223 Turtle Creek E. Dr., both of, Indianapolis, Ind. 46227

Filed Nov. 6, 1978, Ser. No. 958,153

Int. Cl.[2] B65D *1/36*

U.S. Cl. 206—558 **7 Claims**



1. Apparatus for transporting medications or the like and comprising:

a tray having a display area of comparatively thin sheet material, and a housing area,

said display area having an array of dished portions to serve as cups, and having a corrugated portion providing a plurality of parallel grooves to receive implements,

said housing area having door support wall means therein, and

a door on said support wall means and cooperating with said support wall means to provide a substantially closed storage chamber when said door is in a closed position, said door being movable to an open position to facilitate emptying said chamber,

said tray having a retainer wall extending substantially perpendicular to said grooves and facing an end of said grooves,

said chamber being elongated in a direction parallel to said grooves,

said door having a top protion having an elongated slot therein extending parallel to said grooves,

said chamber having a wall sloping downward and outward in a direction away from said corrugated portion of said display area, and

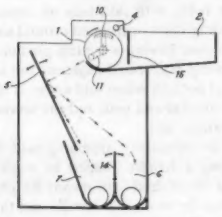
said door having a sidewall portion adjoining said top portion, with said top and sidewall portions of said door closing said chamber.

4,195,735

REBOUND SORTING DEVICE GENERALLY FOR TROUT AND FISH EGGS

Adriano Facchinelli, Ceole di Riva del Garda (Trento), Italy

Filed Jul. 18, 1978, Ser. No. 925,689
Int. Cl.[2] B07C *5/00*
U.S. Cl. 209—510 **6 Claims**



1. A sorting apparatus generally for trout and fish eggs of the type comprising an inclined wall, said wall providing a surface against which eggs are launched and caused to rebound therefrom according to different trajectories depending on the resilience of the eggs and spaced collecting means, for collecting the eggs according to their trajectories; wherein, said apparatus comprises a tank adapted to receive the eggs together with water, and a rotating drum associated to said tank and provided with a plurality of cups on the outer surface thereof, said cups being aligned in parallel rows extending along the drum generatrices and having a perforated bottom, each of said cups being designed to separately accommodate one egg therein so that, upon rotation of said drum, the eggs contained in the cups are removed from the water.

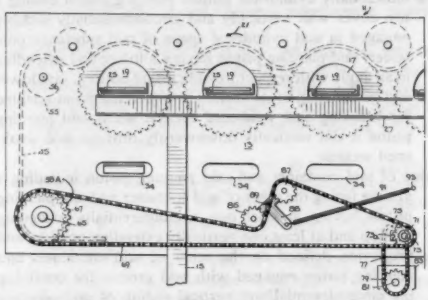
4,195,736

EGG GRADING SYSTEM

Thomas V. Loeffler, Fenton, Mich., assignor to Diamond International Corporation, New York, N.Y.

Filed Jan. 18, 1978, Ser. No. 870,464
Int. Cl.[2] B07C *5/16*; A01K *43/08*
U.S. Cl. 209—516 **17 Claims**

1. An egg grader having a plurality of weighing stations each capable of simultaneously weighing a plurality of eggs on a plurality of individual scales comprising means for lifting and transferring eggs from the scales at one station to that of the next station in the form of rotating lifter bars supported on the periphery of opposed rotating rings, a plurality of lifting fingers mounted on each of said lifter bars, an egg ejecting means for each of said scales which cooperates with means associated with the rotating rings to push an egg which has exceeded a preset weight off said scale, each of said lifting and transfer means including a pair of diametrically opposed lifter bars, the



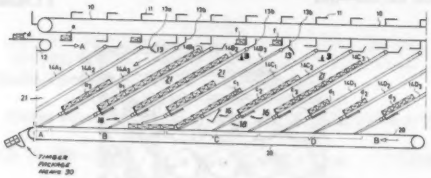
diametrically opposed lifting bars associated with adjacent stations being 90° out of phase with each other, and a conveyor belt disposed below the centerline of said lifter bars and having its movement perpendicular to the direction of movement of the eggs from station to station through said apparatus to receive eggs pushed off said scales and convey said eggs to a collection point, the eggs thereby having been graded.

4,195,737

METHOD AND APPARATUS FOR HANDLING ELONGATED ARTICLES, SUCH AS PIECES OF TIMBER

Alpo Rysti, Frisansintie 22, 02240 Espoo 24, Finland

Continuation-in-part of Ser. No. 744,882, Nov. 24, 1976, Pat. No. 4,081,088. This application Mar. 22, 1978, Ser. No. 888,868
Claims priority, application Finland, May 4, 1977, 771420
The portion of the term of this patent subsequent to Mar. 28, 1995, has been disclaimed.
Int. Cl.[2] B65G *47/19*
U.S. Cl. 209—521 **12 Claims**



1. In a method for handling elongated articles, such as elongated pieces of timber of different types, the steps of delivering the articles to the upper open ends of compartments, said compartments being arranged in groups of compartments, each of which includes a plurality of compartments, in a manner according to which articles of only one type will be situated in compartments belonging to the same group thereof, while arranging the articles in each compartment in a single layer therein and on an inclined slide plane the inclination of which is such that the single layer of articles thereon can slide by gravity down the inclined slide plane of each compartment to be discharged therefrom out of an open bottom end thereof, releasably holding the first of a series of articles delivered to a given compartment in the latter compartment at a lower region thereof while succeeding articles of the same type are delivered to said compartment to form therein said single layer of the articles, then releasing said first article for free sliding

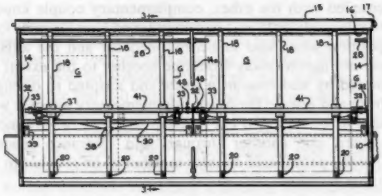
movement out of the compartment through the open bottom end thereof with the remainder of the layer of articles in the compartment gravitationally following the said first article so that a complete single layer of the articles will discharge out of each compartment, the articles to be discharged from the compartments being released in such a way that the layers of articles in the compartments of one group are discharged sequentially one after the other from the compartments of said one group according to a given program, the articles being discharged from the compartments of said one group in a manner such that the compartment of said one group which is nearest to the discharge end of a conveyor beneath the compartment has the layer of articles therein first discharged therefrom, and thereafter the next following compartment of the particular group is discharged, receiving the discharged layers on a conveyor situated beneath the compartments adjacent to the open bottom ends thereof, and discharging the layers thus received on the conveyor from a discharge end of the conveyor to a device for further treating the articles discharged from the conveyor.

4,195,738

APPARATUS FOR TRANSPORTING GLASS SHEETS AND THE LIKE

John O'Neal, 24982 Thompson Rd., Perrysburg, Ohio 43551

Filed Aug. 22, 1977, Ser. No. 826,390
Int. Cl.[2] B60P *3/00*
U.S. Cl. 211—41 **8 Claims**



1. In a device for transporting large planar sheets of rigid material in a generally vertical position including a fixed generally vertical support adjacent the inner face of such planar sheets, the improvement comprising a horizontal guide extending longitudinally of such transporting device behind said fixed support, at least one lateral rail slidably and removably positioned upon said horizontal guide and extending laterally outwardly alongside the vertical edges of such planar sheets, winch means for moving said lateral rail along said horizontal guide and into engagement with the vertical edges of such planar sheets and for maintaining said lateral rail in such engagement, thereby restraining such sheets from longitudinal movement, a longitudinal rail slidably positioned on the outer end of said lateral rail and extending across the outer face of such planar sheets and means independent of said winch means for moving said longitudinal rail against the outer face of such planar sheets and for holding it there, thereby restraining such sheets from lateral movement, whereby such sheets are restrained against movement during transport.

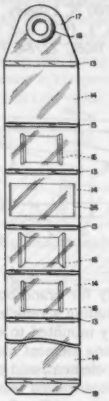
4,195,739

SPOOL HOLDER

John R. Sweet, III, 21800 Wright Ct., Sunnyvale, Calif. 94087

Filed May 15, 1978, Ser. No. 905,986
Int. Cl.[2] A47F *7/00*
U.S. Cl. 211—113 **6 Claims**

1. A holder for spools comprising first and second elongated strips of material disposed face to face, means for connecting said strips to one another at spaced intervals therealong to define a plurality of parallel transverse elongated open-ended spool pockets each having uniform dimensions throughout its length disposed next to one another along said strips, the spacing of said means for connecting being selected to provide pockets which loosely removably accommodate the spools



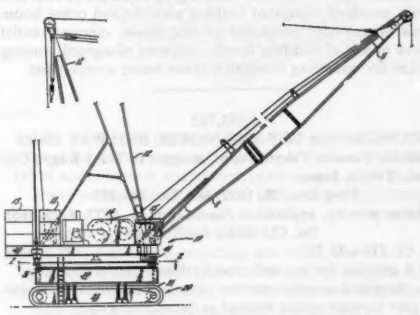
with the walls of said pockets being forced against the spools by gravitational force when the holder is suspended from one end to snugly removably hold the spools in the pockets.

4,195,740

LIFT CRANE SUPPORT SYSTEM

Daniel E. Beduhn, and James G. Morrow, Sr., both of Manitowoc, Wis., assignors to The Manitowoc Company, Inc., Manitowoc, Wis.

Continuation-in-part of Ser. No. 791,312, Apr. 27, 1977, abandoned. This application Apr. 24, 1978, Ser. No. 899,230
Int. Cl.[2] B66C *23/84*
U.S. Cl. 212—66 **5 Claims**



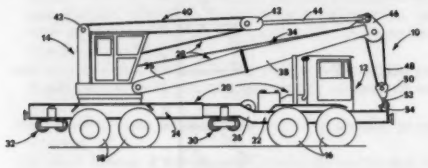
1. The combination comprising, a generally planar and square, rigid frame, a circular track-defining ring mounted on the upper surface of said frame, a transporter assembly including a pair of parallel crawlers interconnected by a body and a pair of rigid cross beams, each of said crawlers is trained to encircle a rigid longitudinal member, a plurality of connecting elements rigidly interconnecting said frame and said cross beams both inboard and outboard of said crawlers, and an upper works supporting platform mounted for rotation on said ring.

4,195,741

TRUCK MOUNTED RAILROAD CRANE HYDRAULIC SWIVEL MEANS

Timothy L. Newman, 700 N. Liberty, Jerseyville, Ill. 62050

Filed Jun. 1, 1978, Ser. No. 911,638
Int. Cl.[2] B66C *23/84*; F16L *39/02*
U.S. Cl. 212—66 **6 Claims**



1. A swivel assembly for crane boom means in a railroad vehicle or the like, including a vehicle frame, a first elongated housing element fixedly mounted to said vehicle frame and a second elongated housing element rotatably mounted on said first elongated housing element, said crane boom means being capable of being mounted to said second elongated rotatably mounted housing element, said first fixedly mounted elongated housing element including a plurality of adjacently positioned upper circumferential groove means and a plurality of adjacently positioned lower circumferential groove means, each of said groove means being connected to an individual longitudinal passageway provided in said first fixedly mounted elongated housing means which extends from and connects one of each of said upper and lower circumferential groove means through the lower end of the first fixedly mounted elongated housing element, said second elongated rotatably mounted housing element also being provided with individual longitudinal passageway which extend from the respective level of each upper and lower circumferential groove means in said first fixedly mounted elongated housing means through the upper end of the second elongated rotatably mounted housing element, sealing means for sealing each upper and lower circumferential groove means in said first fixedly mounted elongated housing element, manifold means connecting the upper end of said second rotatably mounted housing element and the lower end of the said first fixedly mounted housing element with a fluid source, control means for opening and closing fluid flow to the upper circumferential groove means for directing fluid into selective lower circumferential groove means of said first fixedly mounted elongated housing element and crane boom means operatively connected to said lower circumferential groove means of said first fixedly mounted elongated housing element for operating respective crane boom components.

4,195,742

COUPLER FOR TOY AND MODEL RAILWAY CARS

Yoshihide Yumoto, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan

Filed Dec. 28, 1977, Ser. No. 865,195
Claims priority, application Japan, Oct. 11, 1977, 52/121655
Int. Cl.[2] B61G *1/02, 7/04*
U.S. Cl. 213—75 TC **32 Claims**

1. A coupler for toy and model railway cars comprising:

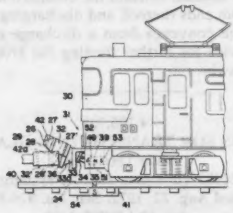
an elongated coupler member pivotally mounted on a coupler support means located at the end of a car;

said coupler member adapted to pivot between a lower position in which the longitudinal axis of said coupler member is substantially parallel to a trackway and an upper position in which the longitudinal axis of said coupler member is inclined relative to the trackway;

a "C"-shaped coupler knuckle secured to the end of said coupler member remote from the car for movement with said coupler member between said lower and said upper positions, said coupler knuckle, when in said lower position, adapted to couple with another, complementary coupler knuckle mounted on an adjacent car and, when moved to said upper position, adapted to uncouple from the other, complementary coupler knuckle;

first magnet means located on said coupler support and second magnet means located on said coupler member, said first and said second magnet means positioned relative to one another to urge said coupler member to said lower position;

said first-mentioned coupler knuckle and the other, complementary coupler knuckle, when coupled with one another, defining a clearance space therebetween to permit said first-mentioned car and the adjacent car to move toward and away from one another by a distance substantially equal to said clearance space; and



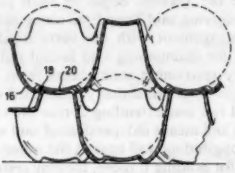
projection means on said first-mentioned coupler knuckle adapted, when said first-mentioned coupler knuckle is coupled with the other, complementary couple knuckle, to releasably hold said first-mentioned knuckle in its lower position when said first-mentioned car and the adjacent car are moved away from one another to the extent permitted by said clearance space and adapted to disengage from and release the other, complementary knuckle when said first-mentioned car and the adjacent car are moved toward one another through said clearance space to thereby permit said coupler member to be pivoted to said upper position.

4,195,743

PACKING TRAY

Roy W. Emery, 1 Donino Ct., Toronto, Ontario, Canada

Filed Jun. 18, 1979, Ser. No. 49,233
Int. Cl.[2] B65D *21/02, 81/16*
U.S. Cl. 217—265 **4 Claims**



1. In a molded tray of the type that is designed to be vertically stacked with other similar trays and that has pockets and posts, the pockets and posts alternating in a plurality of rows that extend longitudinally of the tray and a plurality of rows that extend transversely of the tray whereby each post merges into four pockets except in the case of those posts which are on a row on an outside edge of the tray whereby upon stacking the pockets will rest on the top of a post of an underlying tray and the posts support the pockets of an overlying tray, the improvement of a pair of diametrically opposed outwardly extending protuberances on the side wall of each pocket, the lower extremities of said protuberances extending below the surface of their respective pocket where they join with the pocket and being spaced apart a distance slightly greater than

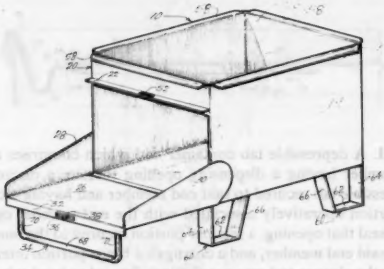
the width of the top of one of the posts, the bottom of said protuberances being adapted to extend below the edge of a post when the trays are stacked to stabilize the trays against lateral displacement.

4,195,744

STORAGE CONTAINER FOR MEAT

Earl E. Christianson, 4932 46th Ave. South, Seattle, Wash. 98118

Filed Jul. 3, 1978, Ser. No. 921,211
Int. Cl.² B65D *87/00*
U.S. Cl. 220—1.5 **3 Claims**



1. A storage container for meat comprising:
a generally rectangular, open-topped box having an opening in one side thereof, said opening extending from the container bottom substantially more than half way to the container top and entirely across the container side;
a door hingeably connected to the container bottom and adapted to completely close said opening, said door having a leaf on each side thereof, each of said leaves being fixedly connected to the door at right angles thereto and having a portion extending a distance beyond the hinged side of the door, said leaves positioned to fit closely adjacent the exterior container wall when the door is closed;
locking means to hold the door in a closed position;
leg means for supporting the container bottom, said leg means defining a loop adapted for entry of the lifting tines of a forklift, and
handle means attached to the door at an upper level thereof, said handle means having a configuration generally defining a loop spaced from said door a distance substantially equal to the height of said leg means,
whereby said handle means support the door in a horizontal attitude substantially level with the container floor when the door is in fully open position to provide a tray for unloading the container, said tray having relatively shallow sides defined by said leaves and providing a sealing juncture with the container defined by the overlap of the extended leaf portions and the container walls.

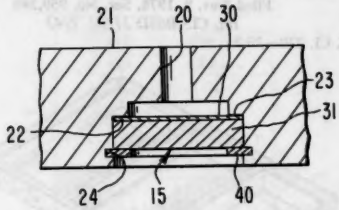
4,195,745

THERMALLY SENSITIVE PRESSURE RELEASE ASSEMBLY FOR SEALED PRESSURIZED VESSEL

Roy D. Roberts, Newark, and Gordon R. Lavering, Belmont, both of Calif., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 13, 1978, Ser. No. 877,215
Int. Cl.² H01K *3/22*
U.S. Cl. 220—2.2 **25 Claims**

9. In combination, a sealed vessel for containing a gas under pressure, a bore through a wall of said vessel providing an aperture through which said gas can leave said vessel with the pressure of said gas in said vessel reaches a selected value, said bore being configured to have an annular ledge therein, and
a pressure release assembly that hermetically seals said aperture at pressures below said selected value, said assembly comprising a rupture plate affixed to said annular ledge and a back-up disc positioned adjacent said rupture plate, said back-up disc serving to reinforce said rupture plate so as to prevent bursting of said rupture plate at pressures below said selected value due to the pressure of said gas in said vessel, said back-up disc being made of material that melts at a temperature corresponding to said selected value for the pressure in said vessel, whereby said back-up



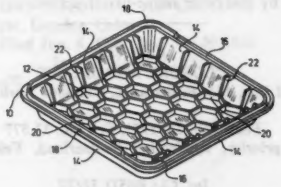
disc ceases to reinforce said rupture plate when the pressure of said gas in said vessel attains said selected value, the dimensions of said rupture plate being such that said rupture plate, when not reinforced, bursts at said selected value for the pressure in said vessel,
said back-up disc being arranged such that the presence of the liquid material of the melted back-up disc impedes the escape of fragments created by the rupturing plate and thereby slows their escaping velocity.

4,195,746

FOOD CONTAINER

Douglas J. Cottrell, 195 Langley Ave., Toronto, Ontario, Canada (M4K 1B8)

Continuation of Ser. No. 840,745, Oct. 11, 1977, abandoned.
This application Dec. 1, 1978, Ser. No. 965,269
Int. Cl.² A45C *11/20*; B65D *1/24*
U.S. Cl. 220—4 E **7 Claims**



1. An insulated, hermetically-sealable, thin-walled food container for the storage and transport of food, comprising:
(a) an upper portion and a lower portion, said upper and said lower portions being identical, each said portion comprising:
(i) a thin-walled flat base surface,
(ii) thin, outwardly-extending side walls, and
(iii) a circumferential lip around the top of said side walls;
(b) locking means adapted to releasably and hermetically lock said upper and lower portions together,
(c) a plurality of elongate wall members integral with and upstanding from the interior surface of said base surface, each of said plurality of wall members being integrally joined at each end thereof to two others of said wall members to define a regular pattern of hexagonally-shaped recesses upstanding from said base surface, except for said wall members immediately adjacent said side wall which are joined to each other at each end and from the outer perimeter of said regular pattern of recesses, and
(d) a plurality of vertical elongate parallel ribs integral with and extending from the interior of each side wall to impart

strength thereto, said ribs extending downwardly into integral join with the integrally-joined ends of said perimeter-forming wall members adjacent said side walls.

4,195,747

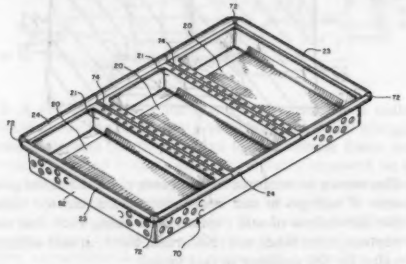
BAKING PAN AND METHOD OF FORMING SAME

Wilbert K. Hare, Lemont, Ill., assignor to American Home Products Corporation, New York, N.Y.

Filed Nov. 9, 1978, Ser. No. 959,349

Int. Cl.[2] B65D *21/02, 7/42*

U.S. Cl. 220—23.2 **8 Claims**



1. A baking pan set comprising an inner structure formed from a single rectangular sheet of material to provide multiple baking molds depending from the sheet material and arranged in a row lengthwise of said sheet, rib members formed from the sheet material between adjacent baking molds and depending therefrom downwardly a distance sufficiently to dispose the lowermost portion of said rib members below the bottom walls of the baking molds, outwardly extending flanges formed at the periphery of the sheet material, an outer frame-like structure of rectangular shape having a vertically disposed main body terminating at the upper end thereof in outwardly extending flanges underlying and secured to said inner structure flanges, whereby said inner structure is disposed within and supported by said outer frame-like structure.

4,195,748

CLOSURE MEMBRANE

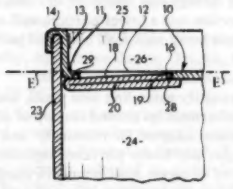
Franco Del Bon, 141, Fedlstrasse,, CH-4663 Aarburg, Switzerland

Filed Feb. 12, 1979, Ser. No. 11,577

Claims priority, application Switzerland, Feb. 15, 1978, 1645/78

Int. Cl.[2] B65D *51/22*

U.S. Cl. 220—258 **10 Claims**



1. A closure membrane for closing a can opening and having an upper and a lower face, which membrane comprises a flat part having an opening therein, a peripherally adjoining border zone thereof destined to be hermetically sealingly connected with a can, and a tab element comprising a pull-tab and a base part, said tab being bent back relative to said base part, said base part of said tab element being sealingly attached to said lower face with said bent-back tab projecting out of said opening, whereby said base part closes said opening in said flat part hermetically.

4,195,749

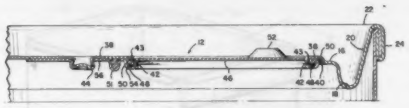
TWO PIECE CONTAINER END

Gerald P. Hawkins, Arvada, Colo., assignor to Occidental Industries, Ltd., Tukwila, Wash.

Filed Sep. 25, 1978, Ser. No. 945,193

Int. Cl.[2] B65D *41/02, 41/32*

U.S. Cl. 220—268 **7 Claims**



1. A depressible tab container end which comprises an end member having a dispensing opening therein; a discrete depressible tab secured to said end member and having a closure portion operatively associated with the end member opening to seal that opening, a retainer portion secured to the inner side of said end member, and a corrugated hinge portion intermediate the closure and retainer portions formed to bend when said closure portion is manually displaced from said dispensing opening, the corrugation in said hinge portion being generally parallel to the desired bending axis of said hinge portion.

4,195,750

MOLDED FLANGE FOR DRUMS OR OTHER CONTAINERS

Max J. Fee, Hamilton, Ind., assignor to Rieke Corporation, Auburn, Ind.

Continuation of Ser. No. 837,683, Sep. 29, 1977, abandoned. This application Feb. 15, 1979, Ser. No. 12,943

Int. Cl.[2] B65D *41/04, 53/00, 39/00*

U.S. Cl. 220—288 **16 Claims**

1. A closure device insertable into a container opening for enclosing the contents of said container which comprises:

a cylindrically shaped flange member having a plurality of serrations in a spaced apart relationship disposed around the periphery of said flange member adjacent an upper end, an internally threaded aperture therethrough and an integral annular lip portion beneath said serrations and adjacent a lower end of said flange member, said annular lip portion having a top surface which is inclined upwardly as it extends outwardly;

a plug cooperating with and received by said internally threaded aperture for sealing said aperture closed; and

said annular lip portion extending radially beyond said serrations and arranged relative to said serrations for tight, preloaded sealing engagement by said top surface with an interior surface of the container.

4,195,751

CUP SELECTION APPARATUS FOR BEVERAGE VENDING MACHINE TO THE IN-CUP TYPE

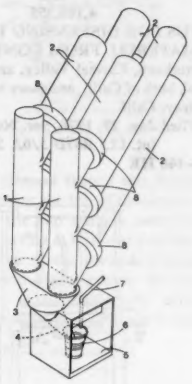
David B. Smith, Rugby, England, assignor to Brooke Bond Vending Systems Limited, Warwickshire, England

Filed Mar. 30, 1978, Ser. No. 891,512

Claims priority, application United Kingdom, Jun. 30, 1977, 27385/77

Int. Cl.[2] A47F *1/08*; G07F *11/32*

U.S. Cl. 221—17 **22 Claims**



1. Cup selection apparatus is a beverage vending machine, said cup selection apparatus comprising:

a plurality of cup-storage tubes in each of which, in use, there is placed a stack of cups nested one in another and containing dry ingredients to which water is to be added at a cup-filling station;

at least two substantially vertical cup-delivery tubes positioned side-by-side and each having at least two of said cup-storage tubes communicating therewith at positions spaced apart one above the other in the direction of the longitudinal axis of the cup-delivery tube, the cup-storage tubes extending from at least one side of the longitudinal axis of the respective cup-delivery tube, and each said cup-storage tube inclined at an acute angle to the longitudinal axis of said cup-delivery tube;

cup-guiding means leading from said cup-delivery tubes to said cup-filling station, and

cup-dispensing means associated with each said cup-storage tube to separate the bottom cup from a stack of nested cups therein and to release said bottom cup to permit it to travel by gravity to the intersection of the cup-storage tube with the respective cup-delivery tube and through the latter and said cup-guiding means to said cup-filling station.

4,195,752

APPARATUS FOR THE ESSENTIALLY UNIFORM FEED OF A FLUENT MEDIUM BY MEANS OF RECIPROCATING FEED PISTONS

Hans Heimgartner, Jona, and Karl Wirz, Meilen, both of Switzerland, assignors to Haeny & Cie. AG., Meilen, Switzerland

Filed Feb. 27, 1978, Ser. No. 881,776

Claims priority, application Switzerland, Mar. 9, 1977, 2935/77

Int. Cl.[2] B67D *5/46*

U.S. Cl. 222—61 **9 Claims**

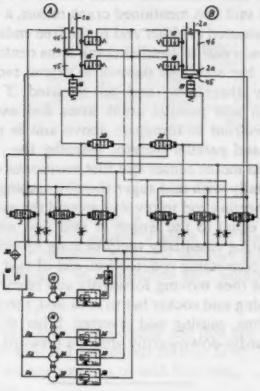
1. An apparatus for essentially uniformly conveying a fluent medium by means of reciprocating feed pistons, comprising:

at least two single-acting feed pistons each movable through a forward feed stroke and a return suction stroke;

a respective forward drive and return drive provided for each said feed piston;

said forward drives comprising a common first pressurized medium source which produces a pressurized medium flow at essentially constant pressure and at essentially constant feed quantity per unit of time;

said return drives comprising a second pressurized medium source;



said forward drive and return drive of each said feed piston producing a piston return velocity which is greater than the piston forward velocity;

said forward drive and return drive being operated phase shifted such that a terminal section of the feed stroke of one feed piston overlaps with a starting section of the feed stroke of the other feed piston.

4,195,753

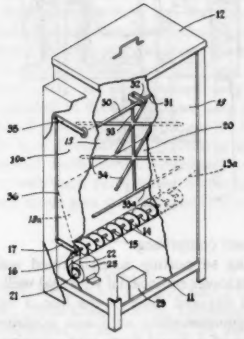
DRY CHEMICAL APPLICATOR

Clifford R. Dyer, Greeley, Colo.

Filed Jun. 6, 1977, Ser. No. 803,536

Int. Cl.[2] G01F *13/00*

U.S. Cl. 222—70 **1 Claim**



1. A dry chemical applicator comprising: a housing which comprises a frame, a hopper carried by said frame and having front, rear, and two side walls, said front and rear walls converging downwardly into a lower auger tube, and a floor below said tube; an auger disposed in said tube and journalled at either end thereof in said side walls; an electric motor on said floor and disposed adjacent one end of said auger; means operably connecting said motor and said auger; an adjustable timer

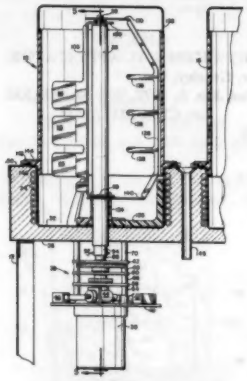
operably connected with said motor and adapted to control the period of operation of said motor for thereby controlling operation of said auger; shaker means located within said hopper, said shaker means comprising crank means rotatably mounted on said one end of said auger, a rocker bar disposed at the upper end of said hopper in the same vertical plane as said auger and journalled in said side walls, crank means fixed to the end of said rocker bar corresponding to said one end of said auger, said last mentioned crank means being substantially longer than said first mentioned crank means, a connecting rod rotatably mounted at either end to the free ends of both of said crank means, a pair of parallel crank arms centrally located on said rocker bar and fixed thereon to extend radially generally horizontally therefrom, and an inverted T bar pivotally mounted on said parellel crank arms and extending downwardly therefrom to terminate above and in proximity with said auger and parallel thereto; whereby the rotation of said auger by said motor causes said first mentioned crank means to rotate coaxially with said auger thereby causing the lower end of said connecting rod to revolve around the axis of said auger at a radius equal to the length of said first mentioned crank means, creating essentially reciprocating motion at the upper end of said connecting rod, the free end of said last mentioned crank means then moving forwardly and rearwardly in a partial arc causing said rocker bar to rock and, through said parallel crank arms, causing said inverted T bar to move concurrently upwardly-downwardly and in a forward-rearward pendulum arc.

4,195,754

SLUSH DISPENSER

William Heier, Warminster, Pa., assignor to Refreshment Machinery Incorporated, Warminster, Pa.

Filed Mar. 13, 1978, Ser. No. 885,917
Int. Cl.[2] A23G 5/02; F25C 7/06
U.S. Cl. 222—146 C **13 Claims**



1. A dispenser comprising:

(a) a housing supporting a refrigerated well, a container open at its lower end coaxial with said well and adapted to contain a flavored slush or the like, a valved dispenser nozzle communicating with said container to facilitate dispensing of a liquid from said container, a stationary upright tube supported by said well, said tube being coaxial with said well and projecting upwardly from a bottom wall of said well into said container,

(b) first and second blades supported for rotation in said container and extending for substantially the entire height of the container, said blades having radially disposed offset fingers,

(c) a single motor in said housing, said motor being connected to each blade for rotating said blades in opposite directions,

(d) coaxial members within said stationary tube, each member providing a removable connection between said motor and one of said blades, said connections being manually separable without tools, and

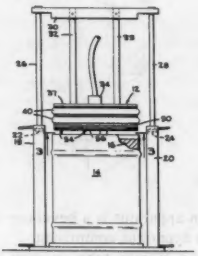
(e) means removably sealing the lower end of said container with respect to said refrigeration well in a manner so that said container is manually removable without tools.

4,195,755

APPARATUS FOR DISPENSING THERMOPLASTIC MATERIAL FROM CONTAINERS

Fred A. Slautterback, Carmel Valley, and R. Blakeley Honeyman, Carmel, both of Calif., assignors to Lockwood Technical, Inc., Monterey, Calif.

Filed Jun. 29, 1978, Ser. No. 920,278
Int. Cl.[2] B67D 5/62, 5/48
U.S. Cl. 222—146 HE **9 Claims**



1. In apparatus for dispensing thermoplastic material from a container which apparatus is of the type including a follower having a shape corresponding to the interior of the container, means for urging the follower toward the thermoplastic material in the container, a heat source carried on the follower, and a pump having an inlet in the follower for removing the material, an improved heat exchanger structure for effecting transfer of heat energy from said heat source to the material adjacent the follower to render the material flowable comprising a plurality of groups of rigid heat conductive fins fixed to the follower in heat conductive relation to said heat source, each said group including a plurality of substantially straight parallelly and equally spaced apart fins that define between each adjacent pair a channel having a first extremity, a second extremity remote from said first extremity and a substantially uniform cross section between said extremities, said groups being sufficient in number and configuration to be substantially coextensive with said follower, said groups being oriented so that said first channel extremities are closer to said pump inlet than said second channel extremities, and means for defining a flow passage in communication with the first extremities of said channels and extending to said pump inlet, said flow passage having a cross-sectional area at least as large as that of the channels, said channels intersecting said passage at obtuse angle so as to avoid restriction of flow from said channels into said passage.

4,195,756

AEROSOL CONTAINER CAP AND ACTUATOR

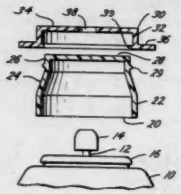
S. Jack Campbell, Plantation, Fla., assignor to Riviana Foods, Inc., Houston, Tex.

Filed May 11, 1978, Ser. No. 905,015
Int. Cl.[2] B67D 5/06
U.S. Cl. 222—182 **1 Claim**

1. A two-piece cap and actuator device for an aerosol container having a valve element on its top, comprising:

a tubular cap element having male and female ends, said

female end being shaped and dimensioned to releasably engage the top of the aerosol container and said male end being closed and being dimensioned similarly to said top of said aerosol container, said cap element when engaged on said top of the aerosol container forming a protective barrier surrounding the valve element; and



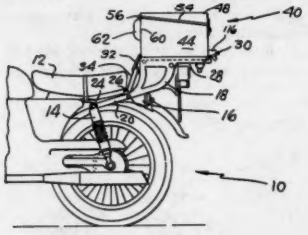
a circular actuator element shaped and dimensioned to releasably engage either the top of the aerosol container or the male end of the cap element interchangeably, said actuator element having at least one hole for engaging and actuating the valve of the aerosol container in such a manner as to continuously release the contents of the aerosol container in a substantially vertical direction through said hole when the container is upright.

4,195,757

MOTORCYCLE ICE CHEST

John A. Jefferson, 5807 14th St., N.W., Apt. 100, Washington, D.C. 20011

Filed Aug. 5, 1977, Ser. No. 822,240
Int. Cl.[2] B62J 7/04
U.S. Cl. 224—31 **8 Claims**



1. For use with a motorcycle having a rearwardly mounted carrier rack, apparatus which comprises container means for fastening to said carrier rack and including a cushioned back rest on an outer wall thereof, and separated ice and dry compartments, said ice compartment including means for containing fresh water and means for supporting a plurality of beverage containers,

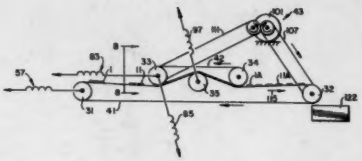
said means for supporting a plurality of beverage containers comprising a substantially planar tray having a plurality of apertures formed therein for receivably retaining said beverage containers therein, said means for containing fresh water comprising a separate container having a removable top and positioned in the forward portion of said ice compartment, said separate container including a selectively actuable faucet positioned through the front wall of said ice compartment, and wherein said planar tray includes a cut out portion wherein said separate fresh water container is positioned.

4,195,758

APPARATUS FOR SEPARATING SNAPSTRATES INTO INDIVIDUAL HYBRID SUBSTRATES

John H. Morgan, Alburquerque, N. Mex., assignor to GTE Automatic Electric Laboratories, Incorporated, Northlake, Ill.

Filed Apr. 3, 1978, Ser. No. 892,604
Int. Cl.[2] B26F 3/00
U.S. Cl. 225—98 **8 Claims**



1. Apparatus for separating a snapstrate into substrates, where the snapstrate is a matrix of thick film dielectric substrates formed on a common dielectric member that is divided into adjacent substrates by at least one kerf, comprising:

a first roller;

a first endless belt;

second and third rollers supporting said first belt for rotation with a first selected amount of tension in it;

first means causing rotation of said first belt;

a fourth roller;

a second endless belt;

second means supporting said first and fourth rollers above said first belt for rotation about their axes which are parallel to axes of other rollers and are generally perpendicular to the direction of rotation of said belts, and supporting said second belt for rotation around said first and fourth rollers with a second selected amount of tension in it;

a fifth roller supported for rotation about its axis which is parallel to the axes of other rollers, said fifth roller being located between top and bottom portions of said first belt and between said second and third rollers at a position that is between said first and fourth rollers; and

third means causing said first and fifth rollers to force said first and second belts into pressure contact with each other at points between said second and fifth and said first and fourth rollers, respectively, so that said first and second belts are contiguous over a suspended length of the latter; the tension in said belts and diameters of said first and fifth rollers cooperating for producing smooth curves in said first and second belts which open in opposite directions where they pass under and over said first and fifth rollers, respectively, for flexing snapstrates (having kerfs generally parallel to the longitudinal axes of rollers and facing toward and away from the top of said first belt) sufficiently in a direction for fracturing and separating them along such kerfs, but not sufficiently to fracture such snapstrates with such kerfs facing in the opposite direction, as they move past said first and fifth rollers, respectively.

4,195,759

COIL BREAKAWAY APPARATUS

John W. Rogers, 25550 Chagrin Blvd., Cleveland, Ohio 44122

Continuation-in-part of Ser. No. 818,793, Jul. 25, 1977, abandoned, which is a division of Ser. No. 713,599, Aug. 12, 1976, which is a continuation-in-part of Ser. No. 648,533, Jan. 12, 1976, abandoned, which is a continuation-in-part of Ser. No. 612,275, Sep. 11, 1975, abandoned. This application Apr. 20, 1978, Ser. No. 898,001
Int. Cl.[2] B26F 3/00
U.S. Cl. 225—103 **12 Claims**

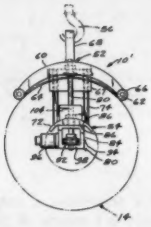
1. Apparatus for separating individual coils from a wound construct of sheet metal web material having an axial opening

therethrough and containing a plurality of axially spaced coils separated by parting lines having intermittently spaced frangible connections interconnecting said coils, said apparatus comprising:

a first member having an operative surface conforming generally to that of the construct opening;

a second member having an operative surface conforming generally to that of the external surface of the construct;

the operative surfaces of said first and second members being



disposed in facing, axially spaced relation to one another whereby the operative surface of said first member is engageable with the inner peripheral surface of the coil to be removed and the operative surface of said second member is engageable with the outer peripheral surface of the next adjacent construct coil;

means for fixing the operative surface of said second member with respect to said construct; and

means for radially displacing the operative surface of said first member with respect to that of said second member.

4,195,760

APPARATUS FOR SLOTTING METAL SHAPES

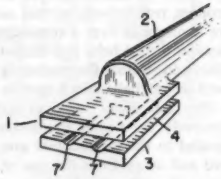
Andre Bos, Toulouse, France, assignor to Technal International S.A., France

Filed Mar. 10, 1977, Ser. No. 776,178

Claims priority, application France, Mar. 11, 1976, 76 07416

Int. Cl.[2] B26F *3/00*

U.S. Cl. 225—103 **4 Claims**



1. A nipper for slotting shapes comprising, a handle, a head mounted on said handle having a transverse slot open at a leading end of said head and terminating at a trailing end of said head as two laterally spaced extensions of said transverse slot, said head comprising two spaced plate portions defining said slot for receiving therein a section of a shape of metal to be sheared by reciprocable movement of said handle relative to a plane passing through said section.

4,195,761

PNEUMATIC FEEDER FOR PUNCH PRESSES AND THE LIKE

Albert W. Scribner, 6 Country Club Rd., Darien, Conn. 06820

Filed May 30, 1978, Ser. No. 910,840

Int. Cl.[2] B65H *17/42, 17/36;* F16K *39/00*

U.S. Cl. 226—115 **27 Claims**

1. A pneumatically operated feeder that is adapted to intermittently advance stock into the work station of a punch press or the like having a working ram; said feeder comprising

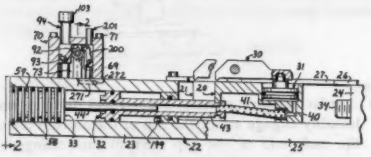
a frame;

a first and second feed slides reciprocally mounted on said frame for movement in feed and index directions;

stock gripping means carried by each of said feed slides and adapted to be moved between stock gripping and stock release positions;

first fluid motor means for reciprocally actuating said feed slides;

a second fluid motor means for actuating said stock gripping means between said stock gripping and stock release positions;



valve means shiftable to a plurality of operative conditions for controlling the operation of said first and second fluid motor means whereby each of said feed slides may be moved through alternate feed and index strokes;

rotary drive means intermittently indexible to successive predetermined rotational positions and operative thereby to shift said valve means to its said successive operative conditions; and

control means for said rotary valve drive means adapted to be operated in timed relation to the operation of said press and to generate at least two serial rotational indexing movements of said rotary drive means for each cycle of operation of said press.

4,195,762

NAIL DISPENSING NOZZLE ASSEMBLY

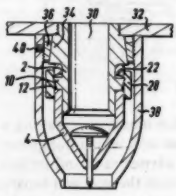
Stanley J. Burton, Leigh-on-Sea, England, assignor to Fisco Products Limited, Essex, England

Filed May 16, 1978, Ser. No. 906,948

Claims priority, application United Kingdom, May 20, 1977, 21380/77

Int. Cl.[2] B25C *7/00*

U.S. Cl. 227—156 **15 Claims**



1. A nozzle assembly for guiding large-headed nails, said nozzle assembly comprising a nozzle holder, a plurality of wing portions mounted on the nozzle holder and jointly defining a nozzle having walls tapering towards a nozzle outlet, means retaining the wing portions in an inner closed position to support therein a nail in an aligned position relative to the nozzle outlet with the nail head resting in the nozzle on the tapering nozzle walls and the nail stem located in the nozzle outlet, in which the mounted wing portions are movable outwardly with respect to each other to allow the aligned nail to pass through the outlet, an outer casing surrounding the nozzle, locating means supporting the outer casing for rotation relative to the nozzle, and means for releasably retaining the

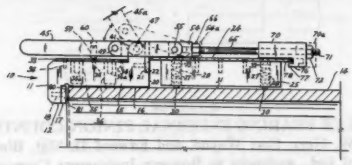
outer casing in any selected rotational position relative to the nozzle.

4,195,763

APPARATUS FOR LOCATING WELDING CARRIAGE TRACK

Clyde M. Slavens, Houston, Tex., assignor to Midcon Pipeline Equipment Co., Houston, Tex.

Filed May 30, 1978, Ser. No. 910,355
Int. Cl.² B23K 1/00
U.S. Cl. 228—29 **11 Claims**



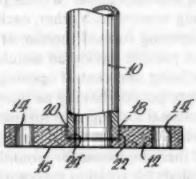
1. Apparatus for use in locating a track disposed about a pipe in a position uniformly spaced from the end of the pipe, comprising body means having inwardly facing first surface means adapted to engage the exterior wall of a pipe and having second surface means generally perpendicular to said first surface means and adapted to engage the end of the pipe and having third surface means generally perpendicular to said first surface means and facing in the same direction as said second surface means and adapted to engage a track disposed to surround the pipe at the side of said track toward the end of the pipe, the spacing between said second and third surface means axially of the pipe being a fixed spacing whereby the track is located in a position spaced from the pipe end by said fixed spacing when said second surface means is engaged with the end of the pipe and said third surface means is engaged with the side of the track toward the end of the pipe.

4,195,764

BRAZING OF POWDERED METAL PARTS

Eldred Bogart, Pekin, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Nov. 2, 1977, Ser. No. 847,961
Int. Cl.² B23K 1/04
U.S. Cl. 228—208 **3 Claims**



1. A method of brazing two metal pieces, at least one of which is a ferrous powdered metal piece, each having a joint surface, comprising the steps of:

plating the joint surface of the ferrous powdered metal piece(s) with a thin layer of nickel;

abutting the joint surfaces;

applying a silver brazing alloy having a silver content in the range of about 25–70% silver to the surfaces and heating the surfaces with a torch until the brazing alloy flows; and

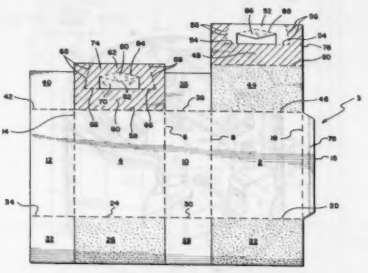
thereafter discontinuing the heating of the surfaces before the nickel flows.

4,195,765

CARTON WITH INTEGRAL HANDLE

Harry I. Roccaforte, Western Springs; Jimmy Hanko, Evanston, and Joseph F. Schillinger, Palos Hills, all of Ill., assignors to Champion International Corporation, Stamford, Conn.

Filed Nov. 15, 1978, Ser. No. 960,957
Int. Cl.² B65D 5/46
U.S. Cl. 229—52 B **2 Claims**



1. In a carton with integrally formed handle comprising first and second opposing side walls, first and second opposing end walls hingedly connecting said side walls to form a generally rectangular carton and top and bottom closure panels hingedly attached to said side and end walls for enclosing said carton, an improved top closure panel comprising:

(a) an inner wall hingedly attached to said first side wall and having integrally formed in the plane thereof a first carton handle,

(i) said first handle being hingedly attached to said inner wall at its base and

(ii) removably attached to said inner wall at predetermined points on the remaining periphery thereof whereby said first handle may be pivotally moved from a horizontal to a vertical position,

(b) an outer wall hingedly attached to said second side wall in superimposed relationship with said inner wall and having integrally formed therein in the plane thereof, a second carton handle,

(i) said second handle being hingedly attached to said outer wall at its base and

(ii) removably attached to said outer wall at predetermined points on the remaining periphery of said second handle, whereby said second handle may be pivotally moved about its base from a horizontal to a vertical position,

(c) means attaching said inner panel to said outer panel in said superimposed relationship whereby said second handle is congruent with and attached to said first handle to form a unitary handle selectively movable from a horizontal to a vertical position for carrying said carton,

(d) a first diamond shaped panel integrally formed with and hingedly attached to the inner top of said first handle,

(e) an inner rectangular panel integrally formed with and hingedly attached to the remaining edges of said first diamond shaped panel for folding under said first and second handles, and

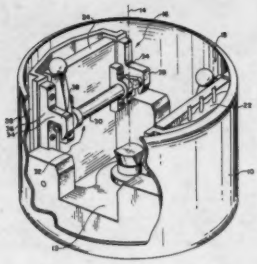
(f) a second diamond shaped panel integrally formed with and hingedly attached to the inner top of said second handle whereby said first and second diamond shaped panels are congruent and overlapping when said first and second handles are congruent and overlapping, said folded, inner rectangular panel and said congruent diamond shaped panels folded about said hinges attaching them to said first and second handles respectively, thereby produce a substantially horizontal diamond panel for protecting the fingers when said carton is carried.

4,195,766

LATCH ASSEMBLY FOR LATCHING PLATENS IN PLACE WITHIN A CENTRIFUGE DEVICE

Rene Lamadrid, Bethesda; Albert Kitchenham, Laurel, both of Md., and C. Michael Jennings, Reston, Va., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Apr. 13, 1979, Ser. No. 29,742
Int. Cl.[2] B04M *9/12*
U.S. Cl. 233—26 **2 Claims**



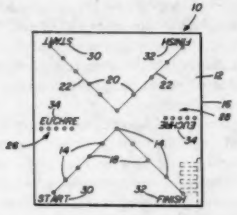
1. In a centrifuge device wherein a receptacle is received and held between first and second platens which have elastomeric linings and which are held in generally upright respective inner and outer parallel planes spaced radially outwardly from a vertical axis of rotation of the device with the first platen being situated in the inner plane and the second platen being fixed in the outer plane, the improvement comprising a latch assembly including first and second keeper members fixed respectively adjacent opposite sides of the second platen, the first platen being mounted for pivotal movement about a generally horizontal axis extending along a lower edge thereof, and said latch assembly further including a shaft journalled to the outer surface of the first platen, which surface faces radially inwardly toward the axis of the rotation of the centrifuge device, first and second latch mounting members fixed, respectively, to opposite ends of said shaft, a handle fixed to and extending from said first latch mounting member, and first and second latch forming members fixed, respectively, to said first and second latch mounting members and arranged to be received in said first and second keeper members upon movement of said handle and the first platen upwardly and radially outwardly from the axis against the second platen.

4,195,767

PEG BOARD SCORING DEVICE

Dale R. Harden, 30 Briarwood, Pontiac, Mich. 48055

Filed Dec. 19, 1978, Ser. No. 970,970
Int. Cl.[2] A63F *1/18*
U.S. Cl. 235—90 **7 Claims**



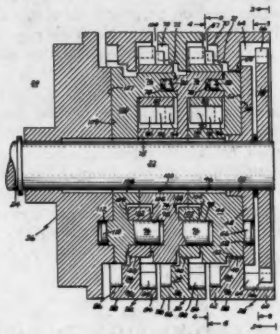
1. A peg board scoring device comprising:
a rigid base;
a first plurality of ten spaced apart apertures in the base disposed along a first pair of converging lines intersecting to forming a "V";
one of said converging lines designated as "start" containing six apertures, the sixth aperture disposed where the lines intersect;
another of said converging lines designated "finish" containing four apertures spaced from the sixth aperture and alinged therewith;
a second plurality of spaced apart apertures in the base disposed along a second pair of converging lines forming a mirror image of the first pair of converging lines; and
the intersection of the first pair of lines and the intersection of the second pair of lines spaced apart a distance.

4,195,768

ROLLER BEARING INTERNAL PINION COUNTER

Robert W. Herr, Fort Wayne, and Edward D. Sigl, Bluffton, both of Ind., assignors to Bowmar Instrument Corporation, Fort Wayne, Ind.

Filed Oct. 5, 1978, Ser. No. 948,957
Int. Cl.[2] G06C *27/00*; G01C *22/00*
U.S. Cl. 235—103 **17 Claims**

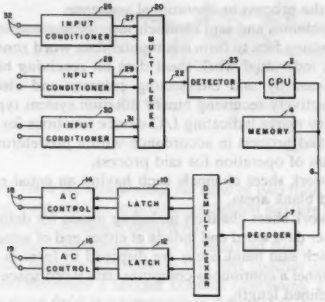


1. An internal pinion revolution counter comprising: a rotatable input shaft the revolutions of which are to be counted; a bearing member rotatably supporting said shaft; at least first and second number wheels each having a radially outwardling extending web portion joined to an outer annular flange portion, said first and second number wheels flange portions respectively extending toward each other, each said web portion having a central opening formed therein, at least said second number wheel web portion having an annular bearing surface formed thereon defining said central opening therein, said first number wheel flange portion having an internal gear segment and cooperating internal locking cam formed thereon and said second number wheel flange portion having an internal full tooth gear formed thereon; means for mounting said first number wheel on said shaft for rotation therewith; a pinion carrier member disposed within said opening in said second number wheel web portion and surrounding said shaft; means for securing said pinion carrier member against rotation with respect to said shaft; a transfer pinion and means for rotatably connecting the same to said pinion carrier member; said transfer pinion having full tooth portions respectively cooperating with said full tooth gear and gear segment and a mutilated portion cooperating with said locking cam; a plurality of rollers and means for rotatably connecting the same to said pinion carrier member; said rollers engaging said second number wheel web portion bearing surface thereby rotatably supporting said second number wheel on said pinion carrier member.

4,195,769
METHOD AND APPARATUS FOR FAULT-TESTING OF ELECTRICAL SYSTEM MONITOR COMMUNICATION CIRCUITS

Jack Elias, Lansdale, and Arthur M. Olen, Pennsbyrg, both of Pa., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 12, 1978, Ser. No. 914,786
Int. Cl.[2] G06F *11/00*
U.S. Cl. 371—20 4 Claims



1. A fault testing apparatus comprising

a plurality of electrical signal switch means for selectively passing an electrical signal therethrough,

an energizing signal source connecting means for selectively connecting one side of said switch means to an energizing signal source and responsive to a control signal for interrupting the connection to said source,

a plurality of signal conditioning means connected to the other side of respective ones of said switch means to complete a circuit to said source and to produce an output signal representative of an operation of a corresponding one of said switch means, and

monitoring means for detecting the output signals from each of said signal conditioning means and

control signal generating means for producing said control signal for selectively interrupting said connection to said source by said switch means.

4,195,770
TEST GENERATOR FOR RANDOM ACCESS MEMORIES

Michael K. Benton, Paoli, Pa., and Suresh H. Sangani, Westerville, Ohio, assignors to Burroughs Corporation, Detroit, Mich.

Filed Oct. 24, 1978, Ser. No. 954,244
Int. Cl.[2] G11C *29/00*
U.S. Cl. 371—21 11 Claims

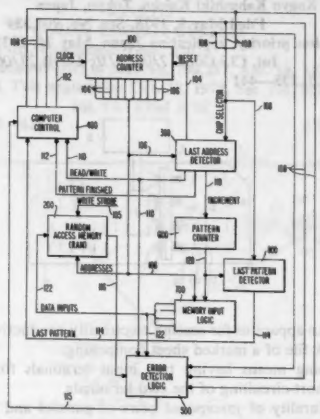
1. A test generator for detecting functional errors in a random access memory (RAM) which has a plurality of address lines and at least one data input line comprising:

data selector means having a plurality of input terminals, a plurality of control terminals and an output terminal, said last mentioned input terminals being coupled to said address lines of said RAM,

pattern counter means having an input terminal and a plurality of output terminals, means coupling respective ones of said last mentioned output terminals to the control terminals of said data selector means,

said data selector means being responsive to the signal levels appearing on its respective control terminals as provided by said pattern counter means for coupling one of said address lines to its output terminal, and

memory input means coupled to said output terminal of said data selector means and to the data input line of said RAM for providing on the latter, input data in the form of a bit pattern, the binary value of the bits in said pattern being a

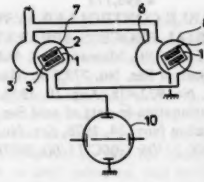


function of the signal levels appearing on the address line coupled to said data selector means output terminal.

4,195,771
METHOD OF IDENTIFYING ARTICLES

Pierre Lagarde, Versailles, France, assignor to Metalimphy, Paris, France

Filed Dec. 7, 1978, Ser. No. 967,303
Claims priority, application France, Dec. 23, 1977, 77 38997
Int. Cl.[2] G06K *5/00, 19/06*
U.S. Cl. 235—380 2 Claims



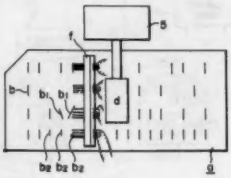
1. In a method of identifying an article provided with identifying magnetic means by positioning said magnetic means in an alternating magnetic field and detecting the resultant disturbance caused to said magnetic field using a detection circuit, the improvement comprising: providing the identifying magnetic means by selecting at least one magnetic member from at least one production batch, each production batch possessing its own particular characteristics of composition, manufacturing process and heat treatment, providing a random shape of the hysteresis loop thereof, which belongs strictly to the said production batch but is common to all members originating from said batch; providing a reference magnetic means comprising an equal number of magnetic members as said identifying magnetic means and from said production batches; using said reference magnetic means to create a disturbance, which is equal to that created by said identifying magnetic means, in opposition in said detection circuit; and identifying said identifying magnetic means by detecting the exact cancellation of the disturbance in said detection circuit.

4,195,772

MARK SENSING APPARATUS

Yasuhiko Nishimura, Yokosuka, Japan, assignor to Ricoh Denshi Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 9, 1978, Ser. No. 904,339
Claims priority, application Japan, May 24, 1977, 52-65926
Int. Cl.[2] G06K *7/06, 7/10;* **G09B** *23/00*
U.S. Cl. 235—441 **1 Claim**



1. An apparatus for sensing electrically conductive marks on a mark file of a marked sheet comprising:

sensing means having two input terminals for sensing a short-circuiting of the two terminals,

a plurality of juxtaposed pairs of parallel and electrically conductive brushes, alternate brushes being electrically insulated from one another and electrically connected at one end to opposite input terminals of the sensing means,

the separation between the centers of adjacent brushes being much less than the width of a mark file and the separation between the centers of the two end brushes in the plurality being substantially the width of a mark file,

a pair of feed rollers disposed in front of the plurality of brush pairs for pinching a marked sheet and feeding the sheet to the brush pairs to enable the other ends of the plurality of brushes to slide on a mark file of the sheet;

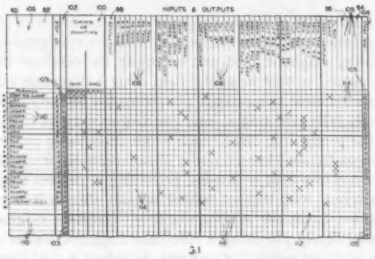
whereby the presence of an electrically conductive mark on the mark file will cause at least two of the brushes to be short circuited and the mark will be sensed by the sensing means regardless of the length or straightness of the mark.

4,195,773

PROGRAMMABLE CONTROLLER SYSTEM FOR INDUSTRIAL PROCESS APPARATUS

Ralph Ogden, 1304 Fisher St., Munster, Ind. 46321

Continuation-in-part of Ser. No. 779,579, Mar. 21, 1977, abandoned, and Ser. No. 932,475, Aug. 10, 1978, said Ser. No. 932,475, is a continuation-in-part of said Ser. No. 779,579, This application Nov. 24, 1978, Ser. No. 963,415
Int. Cl.[2] G06K *21/06;* **G06C** *15/00;* **H02B** *1/04*
U.S. Cl. 235—495 **10 Claims**



1. In a programmable controller system for controlling an industrial process, with the system including a central processing unit including a binary notation system responsive instruction memory register, a tape reader for sensing binary notation system computer data bits on a programming tape when passed therethrough and connected to said unit for storing the data bits in said memory register, and means for operatively connecting I/O devices to said unit, the improvement comprising:

a work sheet for disposing the data bits for each step of the process in sequential computer data words, said work sheet comprising:

a substrate defining a working face delineated to define a series of vertical columns at like ends of which the process inputs and outputs may be separately assigned to the respective columns, and a series of horizontal channels formed for consecutively listing down the sheet the steps of the process in operational sequence,

said columns and said channels intersecting across the sheet working face to form a computer data word zone comprising individual work sheet data bit receiving blank areas formed by said intersecting columns and channels for selectively receiving binary notation system type manual entry marks indicating I/O device functions for each step of said process in accordance with a predetermined program of operation for said process,

said work sheet channels each having an equal number of said blank areas,

said work sheet channels including means for defining computer data word end indicia at either end of same between which said blank areas are disposed to form in each said channel a continuous computer data word space of predetermined length,

with said word end indicia at the respective ends of said channels being vertically aligned across the height of said work sheet and said work spaces being of equal lengths,

whereby each computer word space of the work sheet may be selectively manually marked in said data bit receiving areas thereof, between said word end indicia thereof, binary notation system fashion to provide the computer data word for each step of said process,

a tape for use in transferring said data words from said work sheet face to the reader, said tape comprising:

a ribbon formed from light previous material and delineated to define a group of channels extending longitudinally thereof for the tape length and shaped and spaced transversely thereof to be aligned congruently with a group of said work sheet channels consisting of a predetermined consecutive number of said work sheet channels, when said ribbon is disposed in juxtaposition with said work sheet face with said work sheet channels viewed through said ribbon,

said ribbon being further delineated along its respective channels to define in said channels I/O device data bit receiving spaces consecutively corresponding to and formed to be congruent with said work sheet data bit blank areas when said ribbon channels are disposed in said congruency with said work sheet channels,

means for manually marking said tape spaces, when said tape is sequentially placed in juxtaposed congruency with consecutive of said work sheet channel groups in overlying relation to the data word spaces thereof, corresponding to the location of the I/O device function marks and the data word end indicia of the respective data word spaces of the individual channels of the respective work sheet channel groups, for transferring onto said tape from said work sheet face said process step word data and said word end indicia thereof for each channel of consecutive of said work sheet channel groups, to form on said tape consecutive sets of said data words each set of which the data words of said process steps are consecutively and sequentially disposed transversely of said tape in their order of sequences in said operational sequence of said process,

said reader including means for serially sensing said data word sets of said tape in consecutive sequence with continuous movement of one or more lengths of said tape through said reader,

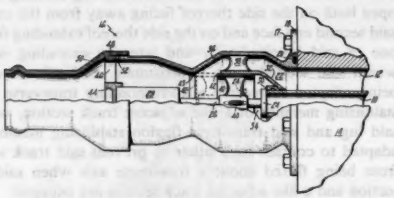
said register including means for storing in same, in said consecutive sequence, said word sets for controlling said process through said central processing unit.

4,195,774

DUAL IN-LINE VALVE CONSTRUCTION

John L. Warner, Simsbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jan. 4, 1979, Ser. No. 1,037
Int. Cl.[2] G05D 23/13
U.S. Cl. 236—13 3 Claims



1. A dual valve for modulating the flow of two fluid streams of different temperatures to produce a desired mixture temperature of said two streams comprising:

a first conduit containing a first pressurized fluid;

an annular housing surrounding said first conduit and forming therebetween a second conduit containing a second pressurized fluid at a temperature different from said first fluid;

an annular guide member connected at one end to the outside of said first conduit and continuing in a downstream direction and forming a first annular passage between said guide member and said housing adapted to pass said second fluid, the downstream end of said guide member extending axially and terminating a distance downstream from the downstream end of said first conduit;

said annular housing having a reduced diameter portion downstream of the downstream end of said guide member whereby an axially extending opening is formed between the downstream end of said guide member and the reduced diameter portion of said annular housing; said opening being adapted to pass therethrough said second fluid;

a second annular passage defined by the inside of said annular guide member and adapted to pass said first fluid upon its exit from said first conduit, said first fluid being mixed with the second fluid adjacent said opening;

a temperature sensor located within said housing downstream from said opening and responsive to the temperature of the fluid in said housing, said temperature sensor including actuator means movable in an axial direction in response to changes in the temperature of the fluid sensed by said temperature sensor;

a rod connected at one end to said actuator means and extending axially upstream therefrom, the other end of said rod having attached thereto a poppet adapted to seat against the downstream end of said first conduit and modulate flow of said first fluid therethrough;

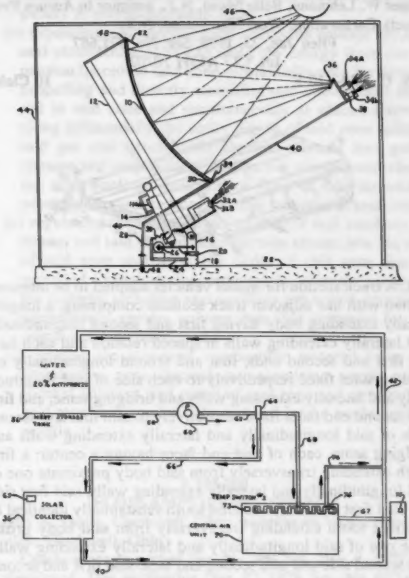
and an annular sleeve member attached to and radially spaced from said rod, the outer periphery of said sleeve member abutting the axially extending downstream end of said guide member, translation of said rod in response to said actuator means to its limit in the upstream direction causing said poppet to seat upon the end of said first conduit thereby stopping fluid flow therethrough and simultaneously moving said sleeve member upstream from said opening and adjacent said guide member, and translation of said rod to its limit in the downstream direction causing said sleeve member to seat upon the reduced diameter portion of said housing thereby covering said opening and stopping fluid flow therethrough and simultaneously moving said poppet away from the end of said first conduit, said rod being adapted to be moved by said actuator means to any position intermediate its upstream and downstream limits whereby each of said fluid streams is modulated inversely with respect to the other to regulate the temperature of the fluid sensed by said temperature sensor.

4,195,775

SOLAR ENERGY SYSTEM

Edward T. Pitts, Hermitage, Tenn. 37076

Continuation-in-part of Ser. No. 788,257, Apr. 18, 1977, abandoned. This application Oct. 18, 1978, Ser. No. 952,342
Int. Cl.[2] F24J 3/02
U.S. Cl. 126—425 4 Claims



1. In a hot air heating system the improvement which comprises a heat collector and plexiglas mirror sunlight reflecting means for heating water in said collector integrally connected by means of circulating piping and means for vertically and horizontally alignable according to the sun's position, a water source, a storage tank for said water, piping means for circulating water from said collector to said storage tank, from said storage tank to a central air unit for radiating heat to hot air ducts and back to said collector, and multidirectional means for aligning said reflecting means and collector so as to follow the sun and cause its rays to hit said reflecting means at substantially a right angle and be reflected directly against said collector, wherein said plexiglas mirror sunlight reflecting means comprise a sheet of plexiglas held between two anchored edges therof in concave form and having a reflective backing and said two edges are anchored by bolting to angle irons and supported by upper and lower support arms, wherein said reflective backing comprises silver acrylic, wherein said multidirectional means for aligning said reflecting means and collector comprise a photoelectric cell scanner, wherein said collector and reflecting means have means for adjusting same responsive to associated photocells which detect the position of the sun in the sky and cause said mirror to make correction whereby it substantially continually faces the sun during sunlight hours, and photocell-cylinder sensor means for adjusting the position of said collector and sunlight reflecting means multidirectionally whereby said collector said collector and sunlight reflecting means continue to face the sun as they move across the sky during daylight hours, thermostat responsive means for automatically circulating hot water from said stor-

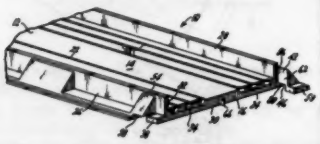
age tank to said central air unit when the inside temperature of a building employing said system falls to a temperature below a selected pre-set temperature, and temperature-responsive sensor means for automatically circulating hot water from said collector to said storage tank and for circulating cooler water to said collector when the temperature of the water in said collector climbs to a selected pre-set temperature.

4,195,776

MODEL VEHICLE RACE TRACK

Roger W. Lehmann, Belle Mead, N.J., assignor to Aurora Products Corporation, West Hempstead, N.Y.

Filed Jan. 23, 1978, Ser. No. 871,687
Int. Cl.[2] A63H *18/02*
U.S. Cl. 238—10 F **10 Claims**



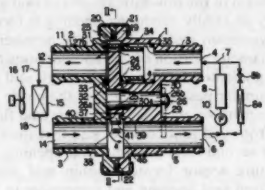
1. A track section for model vehicles adapted to be interconnected with like adjacent track sections comprising: a longitudinally extending body having first and second longitudinally and laterally extending walls in spaced relation and each having first and second ends, first and second longitudinally extending sides fixed respectively to each side of said longitudinally and laterally extending walls and bridging same, and first and second end faces fixed respectively to said first and second ends of said longitudinally and laterally extending walls and bridging same, each of said end faces having a center; a first tooth extending transversely from said body proximate one of said longitudinally and laterally extending walls, said first side and said first end face; a second tooth substantially identical to said first tooth extending transversely from said body proximate one of said longitudinally and laterally extending walls, said second side and said second end face, said first and second teeth extending in transversely opposite directions away from said centers of said first and second end faces, respectively; a first receiving member fixed relative to said body proximate said second side and extending longitudinally from said first end face, said first receiving member defining a recess open both on the side thereof facing the center of said first end face and on the side thereof extending from the one of said longitudinally and laterally extending walls to which said second tooth is proximate; a second receiving member fixed relative to said body proximate said first side and extending longitudinally from said second end face, said second receiving member defining a recess open both on the side thereof facing the center of said second end face and on the side thereof extending from the one of said longitudinally and laterally extending walls to which said first tooth is proximate, each of said receiving members recess being adapted to receive a corresponding tooth of a like adjacent track section; holding means mounted to each of said end faces for releasable inter-engagement with holding means of a like adjacent track section to resist lateral movement between said track sections due to normal track usage upon said track sections being laterally engaged with a tooth of each track section being received by a corresponding recess of said like adjacent track section, while permitting relative lateral movement between said track sections for engagement and disengagement of said teeth in said recesses; a first transverse flexion stabilizing member projecting longitudinally outward relative to said first receiving member in a direction away from said second end face and in substantial registration with the recess thereof; a second transverse flexion stabilizing member projecting longitudinally outward relative to said second receiving member in a direction away from said first end face and in substantial registration with the recess thereof; a first lug mounted to said first side of said body proximate said first tooth between said first tooth and said second end face, said first lug defining a cavity open both on the side thereof facing away from the center of said first end face and on the side thereof extending from the one of said longitudinally and laterally extending walls to which said first tooth is proximate; and a second lug mounted to said second side of said body proximate said second tooth between said second tooth and said first end face, said second lug defining a cavity open both on the side thereof facing away from the center of said second end face and on the side thereof extending from the one of said longitudinally and laterally extending walls to which said second tooth is proximate, each of said cavities being adapted to receive a corresponding transverse flexion stabilizing member of a like adjacent track section, whereby said lug and said transverse flexion stabilizing members are adapted to contact each other to prevent said track sections from being flexed about a transverse axis when said track section and a like adjacent track section are engaged.

4,195,777

HOT WATER HEATING SYSTEM

Munemitsu Ikebukuro, Kariya, and Masao Yamaguchi, Aichi, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jan. 30, 1978, Ser. No. 873,479
Claims priority, application Japan, Feb. 3, 1977, 52/11152; Jul. 1, 1977, 52/79213; Jul. 12, 1977, 52/83948
Int. Cl.[2] B60H *1/02*
U.S. Cl. 237—12.3 B **7 Claims**

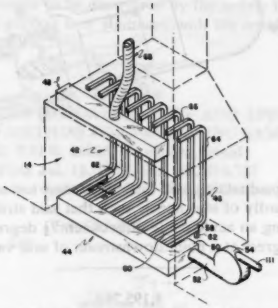


1. A hot water heating system including:
an internal combustion engine having a cooling water inlet, a cooling water outlet and an engine cooling radiator,
a heating radiator having a hot water inlet and a hot water outlet,
a hot water supplying circuit including a first passage connecting the cooling water outlet of said engine and the hot water inlet of said heating radiator, and a second passage connecting the hot water outlet of said heating radiator and the cooling water inlet of said engine, and
means disposed in said hot water supplying circuit for controlling the hot water supplied to said heating radiator,
said means comprising:
a first tube disposed in said first passage,
a second tube disposed in said second passage,
a bypassing member connected between said first and second tube and having a bypassing passage and a pressure responsive valve to bypass the hot water in said first tube to said second tube when the hot water pressure exceeds a predetermined value, and
a main valve disposed in one of said first and second tubes for opening and closing to control hot water supplied to said heating radiator, said main valve member having an additional valve member for closing the bypassing passage when it fully opens.

4,195,778
AUXILIARY AIR HEATER FOR FIREPLACES

Jesse G. Hyten, 1707 Denver, Portland, Tex. 78374, and John I. Hyten, 204 N. Orbit, Del Rio, Tex. 78440

Filed Nov. 15, 1977, Ser. No. 851,714
Int. Cl.[2] F24H *3/02*; F24D *5/02*; F24B *7/04*
U.S. Cl. 237—51 15 Claims



1. In a building including a room having a fireplace opening thereinto and a ceiling, a chimney communicating with the fireplace providing an exit for hot combustion products and extending vertically above the ceiling, and an air handling system including ductwork above the ceiling, the combination comprising

a heat exchanger in the fireplace providing a plurality of tubular sections of thermally conductive material for receiving heat from the fireplace, means providing a first air opening to the tubular sections, a manifold providing a second air opening to the tubular sections, and a conduit connected to the manifold, the conduit extending vertically in the chimney to a location above the ceiling;

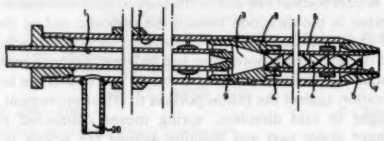
means extending through the chimney providing communication between the ductwork and the conduit for interchanging air between the conduit and ductwork; and

a damper and means mounting the damper inside the chimney for controlling the rate of air flow vertically through the chimney, the damper and conduit cooperating to provide a closure of the annulus between the chimney and the conduit in the closed position of the damper.

4,195,779
MIXING APPARATUS WITH OUTLET NOZZLE AND USES THEREOF

Michel Auclair; Jean-Claude Lecacheur, and Louis Le Parmentier, all of Mont-Saint-Aignan, France, assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 525,075, Nov. 19, 1974, abandoned. This application Jan. 6, 1977, Ser. No. 757,301
Claims priority, application France, Aug. 30, 1974, 74 29594
Int. Cl.[2] B05B *1/34*
U.S. Cl. 239—8 21 Claims



1. A process for the atomization of a flowable combustible material in an elongated atomization zone having an inlet and an outlet, comprising the steps of:

(a) feeding in a substantially concentric and relatively independent feed relationship at least one stream of an auxiliary gas and at least one stream of said combustible material, under pressure, into said inlet of and through said elongated atomization zone and characterized by having substantially all of the pressure drop which occurs in said auxiliary gas and said combustible material in said atomization zone between said inlet and said outlet thereof, said feeding of said streams being characterized by said stream of combustible material being substantially non-atomized by said auxiliary gas stream prior to entry into said inlet of said atomization zone and said auxiliary gas and said combustible material streams being mixed substantially completely in said atomization zone;

(b) expanding said auxiliary gas during its passage through said atomization zone and using the energy from the expansion thereof in said zone substantially only for directly propelling and directly atomizing said combustible material in said zone and simultaneously at spaced intervals along substantially the entire length of said zone splitting said gas and combustible material streams into partial streams and recombining said partial streams and changing the rotational direction of flow of said streams to produce an atomized combustible material at said outlet;

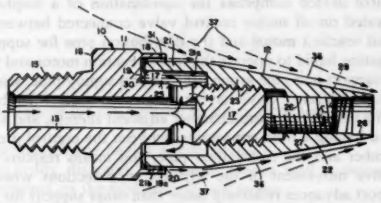
(c) regulating the relative ratio of feed of said auxiliary gas stream and said combustible material stream into the inlet of said zone so that at the outlet of said zone there is provided a substantially continuously atomized combustible material including said auxiliary gas which occupies a substantially greater volume than that occupied by said combustible material; and

(d) passing the atomized combustible material from said atomization zone through non-atomizing nozzle means located adjacent said outlet of said zone and constraining said atomized combustible material into a predetermined profile.

4,195,780
FLOW AMPLIFYING NOZZLE

Leslie R. Inglis, Cincinnati, Ohio, assignor to Vortec Corporation, Cincinnati, Ohio

Continuation-in-part of Ser. No. 856,291, Dec. 1, 1977, abandoned. This application Dec. 27, 1978, Ser. No. 973,691
Int. Cl.[2] B05B *1/06, 1/30*
U.S. Cl. 239—73 24 Claims



1. A fluid-directing flow-amplifying nozzle comprising a rear body section and a forwardly-extending nozzle section; said body section including an axial portion, a cylindrical sleeve portion spaced radially from said axial portion, and an annular transverse wall portion extending therebetween; said axial, sleeve, and wall portions together defining a forwardly-facing annular recess; said nozzle section being threadedly and adjustably connected to said axial portion and having a rearwardly-projecting cylindrical collar received within said forwardly-facing recess; said collar being spaced radially from said axial portion to define an annular distribution chamber therebetween and being spaced radially from said sleeve portion to form an annular forwardly-extending flow-directing passage; and passage means provided by said body section for conducting a primary fluid under pressure into said distribution chamber; said collar having a rearwardly-facing annular surface movable in relation to said transverse wall portion of said body to define a selectively variable metering passage for

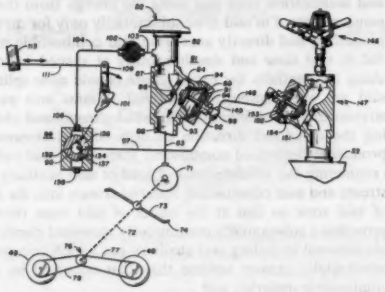
altering the flow of primary fluid from said nozzle as the position of said threaded nozzle section is adjusted with respect to said body section.

4,195,781

SELF-PROPELLED IRRIGATION APPARATUS

David C. Scholz, Roseville, Minn., assignor to Moulton Irrigation Company, Somerset, Wis.

Filed Aug. 21, 1978, Ser. No. 935,172
Int. Cl.[2] A01G *25/09*; B05B *3/02*
U.S. Cl. 239—177 **12 Claims**



1. In a self-propelled irrigation apparatus having an elongated liquid distribution pipe pivotally connected to a central liquid supply pipe at one end, and having a plurality of individual radial sections which extend outwardly from the central supply pipe with swinging connections to each other for limited swinging movement around a generally vertical axis at each such connection and in which each section has a mobile support at one end with a ground-engaging traction wheel, a liquid reaction motor operatively connected to said traction wheel for moving said support, and a control device at each support except one for controlling the liquid reaction motor in response to the relative swinging movement of the adjacent sections of the distribution pipe, the improvement in which the control device comprises the combination of a diaphragm-operated on-off motor control valve connected between the liquid reaction motor and the distribution pipe for supplying irrigation liquid to operate the liquid reaction motor and move the support and pipe around the central supply pipe, said diaphragm-operated valve having a movable control diaphragm with a control pressure chamber adjacent thereto, and a pilot valve having a fluid connection between the control pressure chamber and the distribution pipe, and means responsive to relative movement of the adjacent pipe sections when the support advances relatively faster than other support for actuating the pilot valve and shutting off the motor control valve and liquid reaction motor until the slower support comes into desired alignment.

4,195,782

METHOD AND DEVICE FOR ENHANCING THE DISTRIBUTION OF WATER FROM A SPRINKLER OPERATED AT LOW PRESSURES

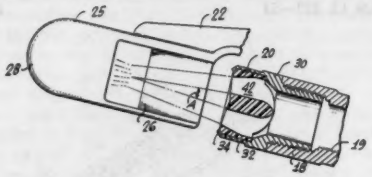
Edward M. Troup, Mt. Baldy, Calif., assignor to Rain Bird Sprinkler Mfg. Corp., Glendora, Calif.

Filed Feb. 3, 1978, Ser. No. 874,833
Int. Cl.[2] B05B *3/16*
U.S. Cl. 239—230 **8 Claims**

1. An impact drive sprinkler having an impact arm with an inner stream deflecting vane disposed to intermitently enter a stream of water emitted from the sprinkler and a nozzle for enhancing the distribution of water from the sprinkler, said nozzle comprising:

a generally tubular body portion having a passage therethrough, for receiving water supplied to said sprinkler;

means for separating said supply water into at least two distinct streams of water; and



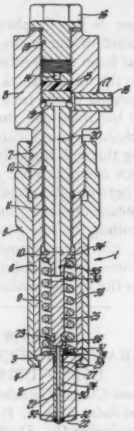
means for directing said distinct streams toward each other outwardly of said nozzle such that said streams intersect forming an acute angle of between 7½ degrees and about 40 degrees at a point downstream of said vane.

4,195,783

PLUNGER VALVE NOZZLE

Kenneth L. Hulsing, 12619 Beacon Hill Ct., Plymouth, Mich. 48170

Filed Jan. 3, 1978, Ser. No. 866,595
Int. Cl.[2] B05B *1/32*; F02M *47/00*
U.S. Cl. 239—533.3 **3 Claims**



1. In a fuel injection nozzle of the plunger valve type, a nozzle body having a constant diameter bore extending therethrough, a plunger having an upper part and a lower part connected together, said lower part having a piston portion slidably fitting said bore, an enlarged portion abuttable with the nozzle body at one end of the bore to limit movement of the plunger in the direction toward the opposite end of the bore and an intermediate portion of reduced section extending into said one end of the bore from said enlarged portion, means for conducting fuel under pressure to said one end of the bore for operation against the piston portion to effect movement of the plunger in said direction, spring means connected to said plunger upper part and reacting against the nozzle body to resiliently oppose said movement of the plunger by the fuel pressure, said spring means being yieldable to accommodate said movement of the plunger and operable to effect return movement of the plunger in the opposite direction when said fuel pressure is relieved, stop means connected to the nozzle body and abuttable by said plunger upper part to limit return

movement of the plunger by the spring means, said piston portion having an internal passage extending longitudinally thereof and open at one end to the fuel pressure in said one end of the bore, the opposite end of said internal passage having a connecting orifice extending transversely to the periphery of the piston portion, said orifice being closed by the bore when said plunger upper part is in abutment with the stop means but being located sufficiently distant from said intermediate portion of the plunger to be uncovered by the nozzle bore when said enlarged portion is in abutment with the nozzle body at said one end of the bore.

4,195,784

THREE LAYER IRRIGATION TUBE AND APPARATUS AND METHOD FOR PRODUCING SAME

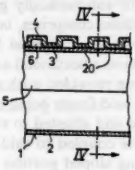
Gideon Gilead, P.O.B. 26025, Jerusalem, Israel

Filed Jul. 11, 1977, Ser. No. 814,727

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1976, 2643710

Int. Cl.² B05B *15/00*

U.S. Cl. 239—542 **28 Claims**



1. Irrigation apparatus comprising:

first, second and third layers of liquid impermeable flexible foil;

the peripheral edges of said first, second and third layers of flexible foil being arranged in substantially mutually coextensive arrangement and being joined together to define first and second longitudinal seams and to define a water supply passage between said first and second layers and a water discharge passage between said second and third layers;

said second layer being apertured to provide fluid communication between said water supply passage and said water discharge passage;

at least one of said second and third layers of flexible foil being embossed to provide at least one raised groove pattern in the form of an elongated path having walls defined by said at least one of said second and third layers and including a plurality of protruding adjacent communicating portions, the walls of said adjacent communicating portions being separated from each other by intermediate areas at which said second and third layers of flexible foil lie in touching relationship and are fused together, said groove pattern defining said water discharge passage.

4,195,785

BURNER STRUCTURE AND METHOD OF MANUFACTURE

Eugene J. Blanzy, Center Line, Mich., assignor to Lincoln Brass Works, Inc., Detroit, Mich.

Filed Nov. 13, 1978, Ser. No. 959,648

Int. Cl.² B05B *1/14*

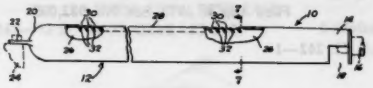
U.S. Cl. 239—566 **6 Claims**

1. Burner structure which comprises,

a body having an internal gasway defined in part by a wall portion of said body,

a series of burner posts in said wall portion each flanked by a pair of tabs extending from the exterior of said wall portion to an inner edge within said gasway,

each tab having end portions which extend outwardly from said inner edge, said end portions converging toward each other in an outward direction,



each said end portion, at a location inward of said exterior of said wall portion, adjoining an inwardly bent, unsevered region of said wall portion, each tab continuing outwardly from said end portions in said regions.

4,195,786

APPARATUS FOR REMOVAL OF SILAGE FROM A SILO

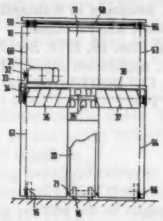
Alfred Walker, Stuttgarter Strasse 38, D-7141 Schwieberdingen, Fed. Rep. of Germany

Filed Sep. 15, 1978, Ser. No. 942,710

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1977, 2743602

Int. Cl.² B02C *18/26*

U.S. Cl. 241—101.7 **18 Claims**



1. Apparatus for the removal of silage from a silo comprising:

a vehicular frame having a front end;

a vertically disposed rectangular planar wall stationarily mounted on the front end of said frame;

a chute formed along a vertical line centrally of said front end wall;

drum-cutter means extending in front of said front end wall across the entire width thereof, means for mounting said drum-cutter means to reciprocate vertically along said front wall at a fixed distance from the surface thereof, said cutter means comprising rotatable cutting and hurling blades positioned in general alignment with said chute and rotatable cutter and feed screws located along a common axis with and on both sides of said cutting and hurling blades, said cutter and feed screws being oppositely arranged to cooperate with the surface of said wall to convey cut-off silage inwardly into proximity with said cutting and hurling blades; and

conveyor means located behind said wall and in alignment with said chute extending rearwardly substantially perpendicular to said front end wall for conveying cut-off silage away from said chute.

4,195,787

ROLLED MATERIAL MARKING ARRANGEMENT

Raymond Thomason, 211 South Main St., Dawson Springs, Ky. 42408

Filed Aug. 8, 1978, Ser. No. 932,035
Int. Cl.[2] B65D 85/67
U.S. Cl. 242—1 5 Claims

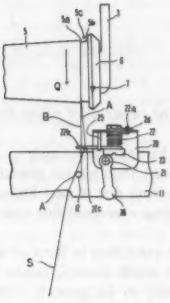
1. A marking arrangement for toilet tissue defined by separable segments comprising imprinted end locating indicia on preselected groupings of said segments.

4,195,788

APPARATUS FOR FORMING TRANSFER TAIL WINDINGS ON A BOBBIN IN AN OPEN-END SPINNING MACHINE

Tsutomu Miyazaki; Takeshi Shimizu, and Keiji Onoue, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Mar. 19, 1979, Ser. No. 22,005
Claims priority, application Japan, Mar. 20, 1978, 53-32765
Int. Cl.[2] B65H 54/02, 54/34, 65/00
U.S. Cl. 242—18 PW 5 Claims



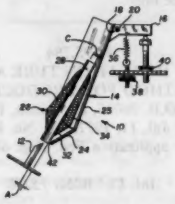
1. An apparatus for forming transfer tail windings on a bobbin in an open-end spinning machine comprising a bobbin having an annular groove disposed in the circumference thereof adjacent one end, said groove having a radially disposed wall portion to prevent transfer tail windings formed in said groove from moving toward the other end of said bobbin and an inclined portion which tapers outwardly from the radially inward portion of said wall toward said end of said bobbin, and yarn regulator and guide means mounted on said machine adjacent said groove for guiding the yarn onto said inclined surface upon rotation of said bobbin to form transfer tail windings.

4,195,789

BOBBIN SLIDES FOR RESPOOLING MACHINES

Kresimir Mista, Obertshausen, Fed. Rep. of Germany, assignor to Karl Mayer Textilmaschinenfabrik GmbH, Oberthausen, Fed. Rep. of Germany

Filed Aug. 15, 1978, Ser. No. 934,056
Claims priority, application Fed. Rep. of Germany, Aug. 17, 1978, 2836978
Int. Cl.[2] B65H 54/20, 67/02
U.S. Cl. 242—35.5 A 8 Claims



1. A bobbin slide for automatically guiding a bobbin on a thread respooling machine comprises, in combination:

(a) an elongated generally U-shaped housing, said housing being pivotable about a horizontal axis at one end thereof, the other end being provided with a sloped portion;

(b) a take-up finger, said finger being disposed proximate to the sloped portion and adapted to receive said bobbin;

(c) spring bias means coupled to said housing one end for urging said housing sloped portion towards said take-up finger; and

(d) adjustable stop means for preventing said sloped portion of said housing from contacting said take-up finger by adjusting the distance from the edge of said sloped portion of said housing to said take-up finger.

4,195,790

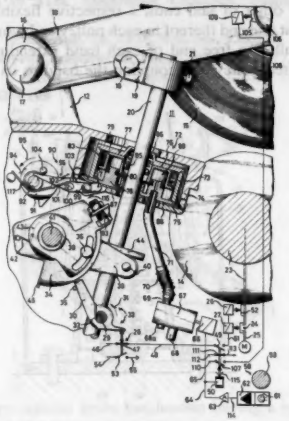
METHOD AND DEVICE FOR DISCONTINUING OPERATION OF A WINDING DEVICE AFTER A THREAD BREAK OCCURS

Franz-Josef Reiners, Ratheim, and Wilhelm Maasen, Mönchen-Gladbach, both of Fed. Rep. of Germany, assignors to W. Schlafhorst & Co., Mönchen-Gladbach, Fed. Rep. of Germany

Continuation of Ser. No. 726,731, Sep. 27, 1976, abandoned. This application Jun. 21, 1978, Ser. No. 917,473
Claims priority, application Fed. Rep. of Germany, Sep. 27, 1975, 2543281
Int. Cl.[2] B65H 63/02, 63/08
U.S. Cl. 242—37 R 17 Claims

3. In a device for carrying out a method of discontinuing operation of a winding device for textile coils after a thread break, the winding device having a winding cylinder for frictionally driving a coil to be wound, means for disconnecting the operation of the winding device, means operatively connected to the coil for actuating said disconnecting means in response to a predetermined coil winding fullness and means activated by said disconnecting means for stopping the driving of the winding cylinder and for issuing a demand signal for a coil exchange, means for issuing a thread break signal upon the occurrence of a break in a thread being wound on the coil, means associated with said actuating means and responsive to the thread break signal for rendering the disconnecting means ineffective and for inducing subsequent lifting of the coil away from the winding cylinder and including means responsive to the thread break signal for stopping the driving of the winding

cylinder and the rotation of the coil and for inducing issuance of at least one signal selected from the group of signals consisting of a fault signal and a demand signal for automatically activating a fault-eliminating device.

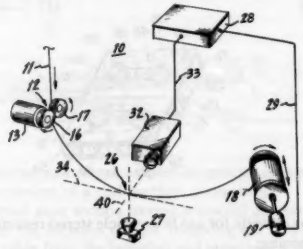


4,195,791

CATENARY CONTROLLER

Ralph E. Frazee, Jr., Spotswood, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed May 18, 1979, Ser. No. 40,026
Int. Cl.[2] B65H *59/38*
U.S. Cl. 242—45 **10 Claims**



1. A method for automatically controlling the sag depth of a catenary of a material moving between a feed and a takeup apparatus, comprising the steps of:

illuminating the material in the vicinity of the lowest point of the catenary;

raster scanning the catenary vertically with a TV camera to provide a video output signal;

processing the video output signal to generate an output control voltage representing the displacement of the catenary image from a predetermined location; and

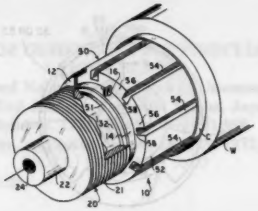
adjusting the speed of the takeup apparatus in response to the generated output control voltage to control the sag depth of the catenary.

4,195,792

EXPANDABLE MANDRELS

Melvin D. Hall, Rte. 6, Box 621-C, Thomasville, N.C. 27360

Filed Dec. 11, 1978, Ser. No. 968,287
Int. Cl.[2] B65M *75/24;* **B23B** *31/40*
U.S. Cl. 242—72 B **8 Claims**



1. An expandable mandrel for gripping tubular members such as paper rolls or cores and the like against the inner wall thereof comprising:

(a) a shaft mounted at one end for rotation and having a free end over which said tubular members are selectively positioned and removed;

(b) an expansible gripping means selectively moved between a first release or relaxed position in nongripping relation to the inner wall surface of said tubular member and a second expanded position in gripping relation to the inner wall surface of said tubular member said expansible gripping means including:

(i) a substantially tubular sleeve having relatively short end portions of a diameter less than the inner diameter of said tubular member and a relatively long intermediate gripping portion, said end portions being secured in substantailly air tight relation to said shaft adjacent said one end and said free end with the intermediate gripping portion there between lying in unconnected relation over the corresponding portion of said shaft;

(ii) said gripping portion formed of a hard rubberlike material having a plurality of spaced radially thickened, relatively stiff, dimensionally stable, first arcuate segments separated by alternating radially thin, relatively yieldable, second segments;

(iii) said sleeve being moveable between the relaxed position with the inner wall of said sleeve lying on said shaft and said gripping portion out of engagement with said inner wall of said tubular member, and a gripping position in which the arcuate length of said radially thin separating portions is stretched and elongated, whereby said radially thickened arcuate segments are moved radially into engagement with the inner wall surface of said tubular members;

(c) said shaft including an air passageway therein with one end of said passageway connected to a source of compressed air and the other end of said passageway in communication with the inner wall of said sleeve.

4,195,793

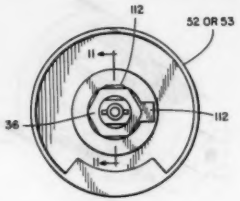
FISHING REEL WITH REMOVABLE ROTOR

Roy E. Stiner, Tulsa, Okla., assignor to Brunswick Corporation, Skokie, Ill.

Filed Aug. 10, 1978, Ser. No. 932,451
Int. Cl.[2] A01K *89/01*
U.S. Cl. 242—84.2 R **4 Claims**

1. In an open face spinning reel used for casting a bait attached to a fishing line and for retrieving the bait and fishing line after casting, the reel having a housing, a center shaft mounted in the housing, a spool mounted on the shaft for holding the fishing line, a pinion gear assembly rotatably journaled near the center and in the forward portion of the housing, the assembly coaxial with the center shaft and having a

bearing stud at one end and a threaded portion at the other end, a handle and gear train assembly mounted on the housing and operable with the pinion assembly, a rotor coaxially mounted on the threaded portion of the pinion assembly and rotatable by cooperative movement of the handle and assembly, and a movable bail mounted on the rotor having an open casting



position and a closed retrieving position, the spool being positioned in place on the shaft by a shaft pin passing there through and being perpendicular thereto, a nut used to secure the rotor to the threaded portion; the improvement of removing the rotor directly from the housing comprising:

(a) a shaft pin having a length that is less than the internal diameter of the nut.

4,195,794

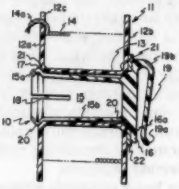
REEL HOLDER WITH DRAG

John D. Ricci, 301 W. 6020 South, Murray, Utah 84107, and John S. Grant, 2674 Alden St., Salt Lake City, Utah 84106

Filed Nov. 13, 1978, Ser. No. 960,246

Int. Cl.[2] B65H *17/44, 75/40*

U.S. Cl. 242—99 **11 Claims**



1. A reel holder with drag comprising,

a hub arranged for journaling through a core of a wire reel, which hub is tapered from a diameter greater than that of said wire reel core to a diameter less than that of said wire reel core as a drag means for engaging the interior of said reel core exerting a friction force thereagainst;

means for securing, in journaled arrangement, said hub through said wire reel core;

a radially projecting disk that extends across a hub end;

means for controlling, by an operator, the attitude of said hub and radially projecting disk; and

spring means associated with said hub for providing an outward biasing of portions of said hub such that they bind against the interior wall of said wire reel core.

4,195,795

WINDING UP DEVICE FOR A SAFETY BELT

Pierre Ardizio, Rue de Saint-Jean 21, 1203 Geneve; Geneva, Switzerland

Filed Dec. 18, 1978, Ser. No. 970,273

Claims priority, application Switzerland, Dec. 21, 1977, 15780/77

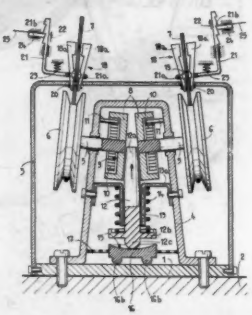
Int. Cl.[2] A62B *35/02;* **B65H** *75/48*

U.S. Cl. 242—107.4 A **23 Claims**

1. A device for winding up safety belts comprising:

a housing;

two members each rotatable around a respective longitudinal axis and each being coupled to said housing, each member having opposite ends, with a disc rigidly connected on one of said ends, and a pulley rigidly connected on the other of said ends, a respective flexible band secured at one end thereof to each pulley and wound around said pulley, a free end of each band extending from its associated pulley and coupling the band to its respective



safety belt, the members being arranged in said housing with said discs adjacent each other; and

a wedge shaped member coupled to said housing, said wedge shaped member being moved by its inertia in response to inertial changes in said housing to a position between said members and in said position engaging said discs to lock said rotation of said members.

4,195,796

TAPE CASSETTE

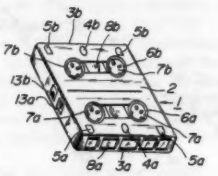
Akira Osanai, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 29, 1978, Ser. No. 891,350

Claims priority, application Japan, Mar. 31, 1977, 52-40002[U]; Mar. 31, 1977, 52-40003[U]; Mar. 31, 1977, 52-40004[U]; Mar. 31, 1977, 52-40005[U]

Int. Cl.[2] G03B *1/04*

U.S. Cl. 242—199 **6 Claims**



1. A tape cassette for use in a vehicle stereo record/playback unit comprising:

a housing for accommodating magnetic tape therein, said housing having two open window portions on different portions of the housing for access to the tape;

a first pair of tape hubs provided in one portion of the housing;

a first length of sound recording tape for being wound and rewound between said first pair of hubs, a portion of said tape being disposed across one of said window portions;

a second pair of tape hubs provided in another portion of the housing; and

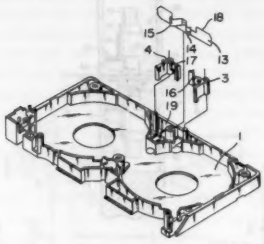
a second length of sound recording tape for being wound and rewound between said second pair of hubs, a portion of said second length of tape being disposed across the other of said window portions.

4,195,797

TAPE CASSETTE

Masatoshi Okamura, and Haruo Shiba, both of Tokyo, Japan, assignors to TDK Electronics Company, Limited, Tokyo, Japan

Filed Aug. 14, 1978, Ser. No. 933,533
Claims priority, application Japan, Nov. 18, 1977, 52-155057
Int. Cl.[2] G03B *1/04;* G11B *15/32*
U.S. Cl. 242—199 3 Claims



1. A tape cassette brake mechanism having a supply and a take-up reel of a tape cassette comprising:

a half-case having a side wall;

a resilient plate member which comprises at least one flat part and first and second bent parts connected to said flat part, said flat part contacting said side wall of said half-case; and,

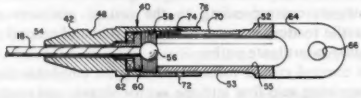
first and second brake members mounted on said half-case, said first and second bent parts respectively contacting said first and second brake members for selectively applying braking force to said reels wherein the resilient palte includes two flat parts at both sides and the two flat parts are contacted with said side wall of said half-case.

4,195,798

UNIVERSAL TOW TARGET ADAPTER

G. Costantino, Hatboro, and D. Carroll, Doylestown, both of Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 15, 1978, Ser. No. 943,255
Int. Cl.[2] B64D *3/02*
U.S. Cl. 244—1 TD 11 Claims



1. A universal tow target adapter for precise alignment with a latch mechanism of a reel laucher, comprising:

a cylindrical nose section having a coaxial aperture extending into the forward end for receiving the trailing end of a tow cable from the launcher and terminating in an annular seat for resisting forward movement of a flange means at the trailing end of the cable, said nose section being tapered at the forward end and having a first external notch on one side only for engaging the latch mechanism of the launcher, said nose section further having a second notch at the rearward end aligned with said first notch;

an end fitting threadingly coupled at one end to the rearward portion of said nose section for adjusting the overall length of said adapter, and formed at the other fitting end to be connected to a tow target, said fitting having a slot along the threaded portion positioned to ensure a precise rotational alignment of said first and second notches with said end fitting;

a key slidingly received in said second notch and said slot for locking and preventing relative coaxial rotation of said section and said fitting; and

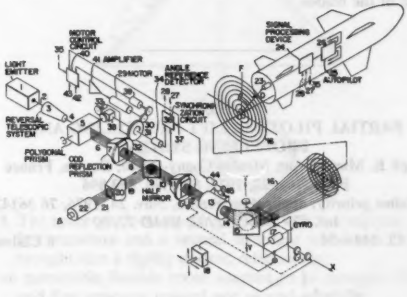
locking means coupled to said end fitting for securing said key in said second notch and said slot.

4,195,799

SYSTEM FOR GUIDING FLYING VEHICLES WITH LIGHT BEAM

Hiroshi Sogo, and Nobuo Yoshino, both of Utsunomiya, Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Japan

Filed Dec. 17, 1976, Ser. No. 751,998
Claims priority, application Japan, Dec. 29, 1975, 50-156298
Int. Cl.[2] F41G *7/00, 9/00*
U.S. Cl. 244—3.13 4 Claims



1. A method for guiding a flying vehicle having a light receiver with a light beam comprising: spirally scanning a relatively thin light beam emitted by a light emitter provided at a launcher by scanning said light beam in a radial direction from one end to the other while turning the scanning direction circularly so as to aim said light beam at the light receiver of said flying vehicle; storing a repetition reference time of the scanning of said light beam in said flying vehicle; launching said flying vehicle; after said flying vehicle has been launched controlling the radiation angle of the scanning light beam according to the lapse of time after launching of said flying vehicle so as to maintain a scanning area of said scanning light beam on said light receiver constant; and guiding said flying vehicle to be on the center of said light beam according to information on a displacement of said flying vehicle from the center of said light beam and information on a displacement angle from a reference axis of said light beam determined from a period of time during which said light receiver receives said light beam.

4,195,800

AUTOGYROS

John F. Wallace, 1 Jonathen Ct., Noble Park, Victoria, Australia

Filed Sep. 16, 1977, Ser. No. 833,918
Claims priority, application Australia, Sep. 28, 1976, PC7548
Int. Cl.[2] B64C *27/02, 27/10*
U.S. Cl. 244—8 10 Claims

2. An autogyro rotor comprising a disc structure and a plurality of blades radiating outwardly from the disc structure, the disc structure comprising an annular member of aerofoil cross-section shaped to produce lift on forward movement of the rotor, a central disc disposed concentrically within the annular member, and a plurality of tubes radiating outwardly

from the central disc and through the annular member and wherein the blades are carried on the outer ends of blade shafts

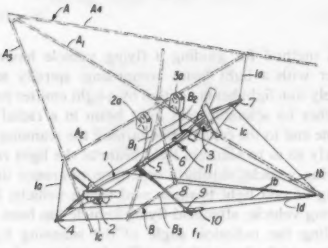
extending through said tubes and rotatable therein to vary the pitch of the blades.

4,195,801

PARTIAL PILOTING, LIFT PROPELLING AND PROPELLING SYSTEM

Joseph E. Martin, Aux Meules Cogny-69640, Denice, France

Filed Nov. 22, 1977, Ser. No. 853,896
Claims priority, application France, Nov. 24, 1976, 76 36142
Int. Cl.[2] B64C *31/02*; B64D *27/00*
U.S. Cl. 244—16 **6 Claims**



1. A lift and propulsion system for partial piloting of a pendular effect piloted aircraft having a gliding structure, said system comprising:

a frame having a frame axis parallel to the pitch axis of the aircraft, said frame being rotatable about said frame axis;

a pair of engines supported in spaced relation on said frame, each of said engines having throttle valves for controlling the power of said engines;

means for controlling the rotation of said frame about said frame axis in order to control the orientation of the thrust of said engines; and

a throttle control means for simultaneously and differentially controlling said throttle valves of said engines, said throttle control means comprising:

a handle having a longitudinal axis;

a support member for supporting said handle for rotation about said longitudinal axis;

pivot mounting means for pivotally mounting said support member on said frame at a position intermediate said engines, so that said support member is pivotable about a pivot axis perpendicular to said longitudinal axis; and

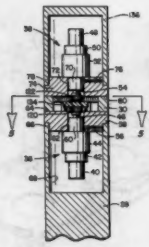
a cable for each of said throttle valves of said engines, said cables extending from said throttle valves to said handle and being attached to said handle on opposite sides of said longitudinal axis.

4,195,802

KINESTHETIC TACTILE DISPLAY SYSTEM

Richard D. Gilson, and Ronald W. Ventola, both of Columbus, Ohio, assignors to The Ohio State University, Columbus, Ohio

Filed Apr. 28, 1978, Ser. No. 901,222
Int. Cl.[2] G08B *0000*
U.S. Cl. 244—17.13 **28 Claims**



1. In piloted aircraft of a variety wherein a control component hand graspable about a longitudinal axis thereof is selectively manipulated to carry out attitude control and wherein a flight director system is provided to derive computed information in the form of first and second attitude vector signals representing aircraft control commands, the improved control system comprising:

a tactile readout member having an outwardly disposed periphery shaped to be grasped by a portion of the hand of the pilot and mounted at a location upon said component suited to permit simultaneous manual control movement thereof, said member being movable omni-directionally transversely to said longitudinal axis;

first motor means mounted upon said control component and having an output for drivably moving said member along a first rectangular coordinate path;

second motor means mounted upon said control component and having an output for drivably moving said member along a second rectangular coordinate path simultaneously with said movement along said first rectangular coordinate path, said second rectangular coordinate path being orthogonally disposed with respect to said first path;

first and second potentiometer means mounted upon said control component, having respective first and second outputs corresponding to the instant positions of said tactile readout member along said first and second rectangular coordinate paths;

first control circuit means including an emphasis stage for receiving said first attitude vector signals and responding to the receipt thereof to form a first input signal having a transient pulse component for developing an initial, accelerative output at said first motor means, an input summing stage for receiving said first input signal and said first potentiometer means first output and deriving a difference signal therefrom, and means for selectively energizing said first motor means in correspondence with said transient pulse component and said difference signal; and

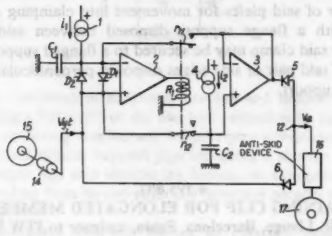
second control circuit means including an emphasis stage for receiving said second attitude vector signal and responding to the receipt thereof to form a second input signal having a transient pulse component for developing an initial, accelerative output at said second motor means, an input summing stage for receiving said second input signal and said second potentiometer means second output and deriving a second difference signal therefrom, and means for selectively energizing said second motor means in correspondence with said transient pulse component of said second input signal and said second difference signal.

4,195,803

ANTI-SKID AIRCRAFT BRAKE CONTROL SYSTEM WITH HYDROPLANING PROTECTION

Alain J. Faure; Alain Y. Geoffroy, and Louis Signorelli, all of Toulouse, France, assignors to Societe Nationale Industrielle Aerospatiale, Paris, France

Filed Aug. 24, 1978, Ser. No. 936,489
Claims priority, application France, Sep. 9, 1977, 77 27304
Int. Cl.[2] B60J 8/10; B64C 25/46
U.S. Cl. 244—111 8 Claims



1. In a system for braking wheels of a vehicle, particularly an aircraft travelling on the ground, comprising an anti-skid device avoiding the locking of the braked wheels and receiving speed data from at least one detector coupled to at least one non-braked wheel of the vehicle,

the improvement comprising, between said speed detector and said anti-skid device, a correction device comprising:

first means capable of transmitting to the anti-skid device said speed data coming from said detector each time that the variations of these speed data with respect to time are lower than a deceleration threshold representative of aquaplaning of said non-braked wheel,

said first means comprising a first constant current generator associated with a first capacitor so that the ratio of said current to the capacity of said first capacitor is such that the variations of the voltage at the terminals of said later as a function of time correspond to said deceleration threshold,

second means capable of transmitting, at each instant, to said anti-skid device, a decreasing speed datum estimated from the value of said speed data at the moment of the start of said aquaplaning of the non-braked wheel,

said second means comprising a second constant current generator associated with a second capacitor so that the ratio of said current to the capacity of said second capacitor is such that the variations of the voltage at the terminals of the latter as a function of time correspond to a usual predetermined deceleration of the vehicle, said second capacitor being capable of recording the value of said speed data at the moment of the start of the aquaplaning of said non-braked wheel, and

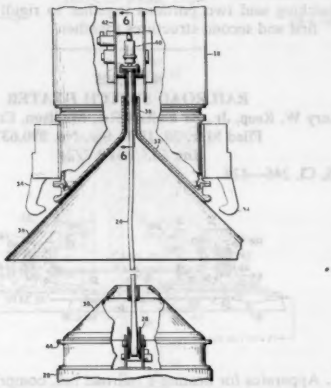
switch means capable of rendering said first current generator active and said second current generator inactive each time that the variations of said speed data with respect to time are lower than said deceleration threshold and of rendering the second current generator active each time that the variations of said speed data are greater than said threshold.

4,195,804

SPACE PLATFORM DOCKING DEVICE

Edward J. Hujsak, La Jolla, and LeRoy E. Siden, San Diego, both of Calif., assignors to General Dynamics Corporation, San Diego, Calif.

Filed Mar. 30, 1978, Ser. No. 891,884
Int. Cl.[2] B64G 9/00
U.S. Cl. 244—161 7 Claims



1. The space platform docking device which comprises:

a first structure and a second structure which are to be brought into a rigidly docked relationship;

an extendable flexible boom adapted to be extended from said first structure toward said second structure;

a hollow generally conical funnel means on said second structure with the open larger end of said funnel means extending toward said boom;

boom capture means located adjacent to the smaller internal end of said funnel means;

said capture means comprising a closed ended tubular member adapted to receive the end of said boom, a pressure actuated switch at the inside of the closed end of said tubular member adapted to be actuated by the end of said boom, a ring surrounding said tubular member connected to a puller mechanism, said puller mechanism electrically connected to said switch whereby switch actuation causes said ring to be moved by said puller mechanism to crush said tubular member and boom and mechanically lock them together; and

means to retract said boom on one of said first and second structures;

latch means on each of said first and second structures adapted to move into latching engagement upon contact;

whereby as said structures move toward each other the end of said boom moves across the inner surface of said funnel means to said boom capture means, said boom is retracted and said latch means is engaged.

4. The method of space platform docking which comprises the steps of:

providing an extendable flexible boom and a first portion of a latching means on one structure;

providing a boom capture means, a generally conical funnel leading to said boom capture means and the remaining second portion of said latching means on a second structure;

moving said structures toward each other so that the end of said boom contacts the inner surface of said funnel means;

continuing to move said structures toward each other so that said boom end moves over said funnel surface until the end engages said boom capture means;

securing said boom end to said boom capture means by moving said boom end into operative engagement with a pressure actuated switch at the end of a tubular member

and crushing said tubular member and boom in response to switch actuation to lock said tubular member to said boom;

holding said boom end in said capture means for a period sufficient to eliminate relative motion between said first and second structures;

retracting said boom into one of said first and second structures until said first and second portions of said latching means are brought into contact; and

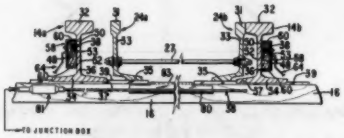
latching said two portions together to rigidly secure said first and second structures together.

4,195,805

RAILROAD SWITCH HEATER

Henry W. Keep, Jr., 88 Ewharf Rd., Madison, Conn. 06405

Filed Mar. 20, 1978, Ser. No. 890,637
Int. Cl.[2] E01B 7/24
U.S. Cl. 246—428 **21 Claims**



1. Apparatus for heating a railroad rail, comprising:

an elongate, bendable, high temperature heating cable disposed lengthwise against and along a side of the rail web, said cable comprising an electrical resistance heating wire encased in high temperature resistant electrically insulating material confined inside a thermally conductive deformable metal sheath,

an elongate, pliable, heat insulating mat disposed lengthwise against and along a length of said cable and portions of said web laterally adjacent thereto to prevent heat losses by convection or radiation from said cable length, said mat comprising an elongate mass of high temperature resistant ceramic fiber insulation confined in a flexible sleeve that prevents fiber of said mass from creeping between said cable and the rail,

an elongate, substantially rigid casing member fitted lengthwise over said mat and bearing against said web side to confine said mat in place,

means holding said casing member tightly in place against the rail web; and

means for supplying current at high wattage to said wire;

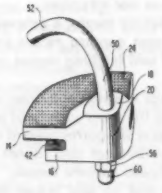
whereby the rail along said cable length is heated efficiently by conduction, yet burn-out of said cable is prevented, during heating of said cable by said current.

4,195,806

CABLE TRAY CONDUIT CLAMP

Richard C. Berry, Camillus, N.Y., assignor to Crouse-Hinds Company, Syracuse, N.Y.

Filed Oct. 7, 1977, Ser. No. 840,432
Int. Cl.[2] F16L 3/24
U.S. Cl. 248—70 **4 Claims**



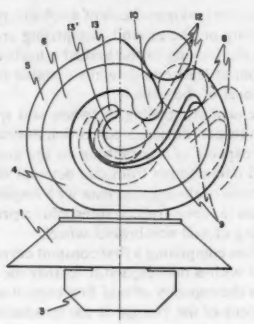
1. A conduit clamp for securing a conduit at any desired angle relative to a flanged support comprising a one-piece body member having a post, a pair of parallel spaced apart plates each having a pair of side edges disposed at right angles to each other, said plates being disposed on opposite ends of said post located adjacent said right angles between said side edges of said plates, flat, knurled gripping surfaces on said plates extending between said side edges around said post and a raised boss on the outer surface of one of said plates disposed in alignment with said post, said body having an aperture extending through said boss, plates and post perpendicular to said plates, a rod rotatably mounted in said aperture having a hook-shaped end portion spaced from the plate having the boss thereon, fastening means secured to the opposite end of said rod for drawing said hook portion toward said body to clamp a conduit therebetween and set screw means threaded through the other of said plates for movement into clamping engagement with a flange support disposed between said plates whereby said clamp may be secured to a flanged support with either of said pair of side edges disposed perpendicular to the flanged support.

4,195,807

RETAINING CLIP FOR ELONGATED MEMBERS

Joaquin R. Llauge, Barcelona, Spain, assignor to ITW Espana, S.a., Barcelona, Spain

Filed Jun. 26, 1978, Ser. No. 919,109
Claims priority, application Spain, Jul. 4, 1977, 229.733[U]
Int. Cl.[2] F16L 3/10
U.S. Cl. 248—74 A **7 Claims**



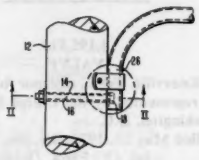
1. A one-piece plastic clip for fastening an elongated element to a supporting surface including a head, means for fastening said head to the supporting surface, and integral clip means extending from said head in a direction opposite to said fastening means, said clip means including two lateral sections, the first section having a substantially rigid generally C-shaped configuration whose concavity faces the second section, said second section being resilient and having a shallower C-shaped configuration whose concavity faces said first section, the free end of said second section being acutely bent back upon itself to form a resilient flap extending into the interior of said concavities and forming a restrictive throat between said flap and the free end of said first section, the free end of said flap being reversely bent into a resilient hook-shaped configuration having its concavity facing in spaced opposed relation to detent means carried by the free end of said first section, whereby introduction of an elongated element into said restricted throat causes lateral deflection of said flap and said second section until said element is embraceably accepted within the adjustable concavity of said free end hook of said flap and impingingly restrained by the free end of said first section.

4,195,808

COMBINATION MOUNTING BRACKET AND SUPPORT PIPE

Melvin R. Anderson, Avon Lake, Ohio, assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 12, 1978, Ser. No. 941,612
Int. Cl.² E04G 3/00
U.S. Cl. 248—219.1 **2 Claims**



1. A combination mounting bracket and support pipe for mounting a luminaire or the like to a vertical pole, said combination mounting bracket and support pipe comprising:

a curved tubular support pipe including a shorter leg and a longer leg, said shorter leg having an elongated slot extending from its end edge in a direction parallel to the axis thereof;

an elongated thru-bolt having an enlarged head thereon adapted to extend through said vertical pole, said elongated slot being constructed and arranged to slip over said thru-bolt and contain said enlarged head within said shorter leg of said tubular support pipe, and

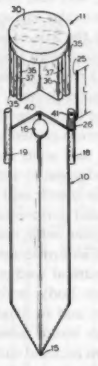
a substantially U-shaped clamp having laterally extending arcuate flanges thereon and welded to said shorter leg of said curved tubular support pipe on the opposite side from and slightly above said elongated slot for clamping said support post to said vertical pole.

4,195,809

SCREED BAR SUPPORT STAKE AND METHOD

Donald R. Morrison, 2109 Camp Green St., Charlotte, N.C. 28208

Filed Aug. 23, 1978, Ser. No. 935,931
Int. Cl.² E04C 5/12
U.S. Cl. 249—205 **5 Claims**



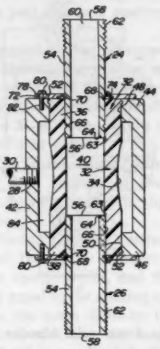
1. A screed bar support stake comprising: a formed metal stake having a pointed lower end, retention means at the upper end for supporting and retaining a screed bar thereon, an elongated flexible member extending vertically upwardly from said upper end and having an outer end portion terminating at a distance sufficiently remote from said upper end such that when said stake and a screed bar supported thereon are embedded in concrete the outer end of said flexible member provides a means protruding above said concrete for locating said stake.

4,195,810

PINCH VALVE

Aaron M. Lavin, 3500 Davisville Rd., Hatboro, Pa. 19040

Filed Mar. 31, 1978, Ser. No. 892,241
Int. Cl.² F16K 7/07
U.S. Cl. 251—5 **14 Claims**



1. A pinch valve comprising a hollow housing having a control port, a pair of end walls and a side wall, each of said end walls including an opening therein communicating with the interior of said housing, a constrictable tubular member formed of a resilient material and having a circular sidewall terminating in an opposed pair of ends and a central passageway extending therebetween for carrying a fluid therethrough, and a pair of tubular couplings each of said couplings having a passageway extending therethrough, said constrictable member being disposed within said housing but spaced from said side wall to form a control chamber therebetween and with one end of the constrictable member being frictionally fit within the opening in one end wall and the other end of the constrictable member being frictionally fit within the opening in the other end wall, one end of one of said couplings being frictionally fit within said central passageway and one end of the other coupling being frictionally fit within the other end of said central passageway, the transverse thickness of the circular sidewall of said constrictable member disposed contiguous to the end of the coupling extending therein being at least equal to the radius of the passageway in said couplings, whereupon when said control chamber is pressurized said constrictable member constricts the central passageway restricting the flow of fluid therethrough without moving into the passageways in said couplings.

4,195,811

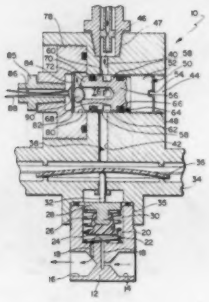
ELECTRONIC VALVE CONTROL MEANS

Anthony P. Corrado, Totowa; Vincent P. Marchese, Morris Township, Morris County; Frank S. Morici, Haskell, and Frank W. Timte, Budd Lake, all of N.J., assignors to EMX Controls Inc., Cedar Grove, N.J.

Filed Aug. 22, 1977, Ser. No. 826,891
Int. Cl.² F16K 31/02
U.S. Cl. 251—30 **3 Claims**

1. A device for controlling fluid flow through a valve, said valve being normally biased in one operative attitude comprising, a housing associated with said valve and including a movable control member movable from a first to a second position for changing said one operative attitude of said valve, said housing further including a first fluid orifice for directing a control fluid under pressure to said control member and to a

bleed orifice assembly, said bleed orifice assembly having a second orifice communicating with said first orifice, said second orifice terminating in a normally open bleeder valve seat, a piezoelectric crystal mounted in said housing adjacent said valve seat, said crystal being mounted with peripheral edge support so that central portions thereof are free to move laterally towards said valve seat when said crystal is energized, a separate bleeder valve element disposed between said crystal and said valve seat, and means for energizing the crystal so as



to deform same to force said bleeder valve element into contact with said bleeder valve seat to close said bleeder orifice thereby causing fluid pressure to build up in said first orifice so as to cause said control member to move to said second position, said bleed orifice assembly including a plug disposed within a bore interrupting said first orifice, said plug having means for connecting said interrupted portions of said first orifice and means for connecting said bleed orifice to said first orifice.

4,195,812

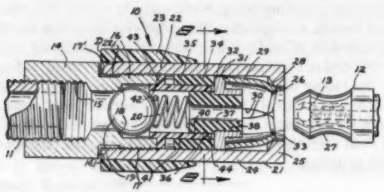
COUPLER FOR GREASE GUNS

Paul Norcross, Des Plaines, Ill., assignor to Thexton Manufacturing Company, Minneapolis, Minn.

Filed Dec. 27, 1977, Ser. No. 864,253

Int. Cl.[2] F16L *37/28*

U.S. Cl. 251—148 **10 Claims**



8. A coupler providing a flow connection between a conduit through which grease may be supplied under pressure and a grease fitting, comprising

a tubular base adapted for connection to such a conduit, a tubular rotatable socket having a rear end embracing one end of the base and threaded thereon and also having a front end with an annular in-turned lip defining the access openings through which the fitting is received

a plurality of clamping jaws within the socket and engaging the annular lip to grasp the fitting, the jaws lying along the inner periphery of the socket,

gasket means in the socket and sealing against the inner periphery thereof between the jaws and the end of the tubular base, the gasket means also having a gasket base with a plurality of apertures therein, the base at the periphery of one aperture sealing against the fitting grasped by the jaws, and

a non-yielding slide means within the rotatable socket and slidable longitudinally along the inner periphery thereof, the slide means being disposed between and bearing against the end of the tubular base and the jaws and through other of the said apertures of the base to move the jaws forwardly as the socket is rotated on the tubular base.

4,195,813

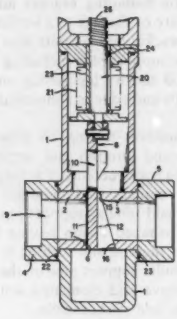
VALVE

Nakwon Cho, Knoxville, Tenn., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 15, 1972, Ser. No. 253,260

Int. Cl.[2] F16K *25/00*

U.S. Cl. 251—203 **1 Claim**



1. An isolation valve suitable for use in systems using corrosive process gas comprising:

(a) a hollow valve body having inlet and outlet sides and defining an open-ended bore extending through said inlet and outlet sides;

(b) a generally cylindrical seat insert defining a flow passage fixed to said inlet side of said valve body within said open-ended bore, said seat insert terminating within said valve body in an annular surface lying substantially within a plane normal to the axis of said seat insert and defining a groove coextensive with said annular surface;

(c) an elastomeric O-ring seal disposed within said groove;

(d) a gate having a solid portion, a perforated portion defining an open-ended bore extending through said gate, and a first flat face portion coated with polytetrafluorethylene coextensive with said solid and perforated portions disposed in a plane adjacent to and parallel with said annular surface of said seat insert; said gate being reciprocable to permit said solid and perforated portions to be selectively brought into register with said annular face portion to respectively close and open said valve; and

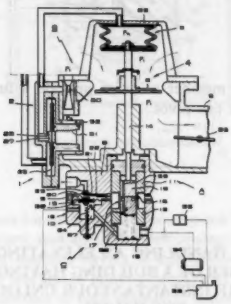
(e) a generally cylindrical wedge insert fixed to said outlet side of said valve body within said open-ended bore spaced apart from and in axial alignment with said seat insert, said wedge insert terminating within said valve body in at least two inclined surfaces; and said gate having a second face portion opposed to said first flat face portion and provided with at least two raised inclined surfaces, said raised inclined surfaces of said second face portion respectively engaging said inclined surfaces of said wedge insert when either of said solid and perforated portions of said gate is brought into register with said annular face portion so as to force said first flat face portion against said O-ring seal.

4,195,814

CONTINUOUSLY OPERABLE FUEL INJECTION DEVICE

Kei Kimata, Ama; Yoshinobu Yasuda, Iwata; Ikuo Kinashi, Iwata; Yoshihiro Matsumoto, Iwata, and Saburo Ohshima, Iwata, all of Japan, assignors to NTN Toyo Bearing Company, Limited, Osaka, Japan

Filed Jun. 28, 1978, Ser. No. 919,925
Claims priority, application Japan, Jun. 28, 1977, 52-85797[U]
Int. Cl.[2] F16K *1/52*
U.S. Cl. 251—205 **2 Claims**



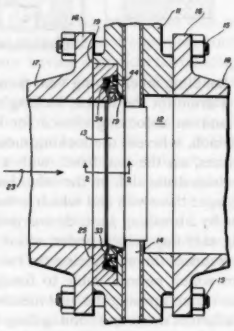
1. A continuously operable fuel injection device comprising a sleeve having a substantially triangular metering window communicating with the outlet port of a main body, said sleeve being inserted in the cavity of said main body, and a control spool having an annular groove communicating with the inlet port of said main body through an axially extending through hole, said control spool being axially slidably inserted in said sleeve, said substantially triangular metering window of said sleeve cooperating with the annular groove of the control spool to form a variable orifice, the end face of said control spool resiliently pressed against a control rod adapted to transmit the displacement of a flow rate detecting valve disposed in a suction air passage, whereby a direct correspondence between the degree of opening of the variable orifice and the axial position of the flow rate detecting valve is assured.

4,195,815

BIDIRECTIONAL VALVE FOR CRYOGENIC FLUIDS

Francis W. Stager, Stafford Springs, Conn., assignor to Litton Industrial Products, Inc., East Hartford, Conn.

Filed May 30, 1978, Ser. No. 910,603
Int. Cl.[2] F16K *1/22*
U.S. Cl. 251—306 **5 Claims**



1. A valve assembly comprising

a stationary valve body having a passageway for fluid,

a movable valve member supported in said valve body adapted to close said passageway,

a recess in the valve body opening radially toward said passageway generally perpendicular to the sealing surface of said valve member,

said recess being defined by a radially outermost wall and by opposing side walls radially inwardly converging from said radially outermost wall,

a seating ring having a radially outermost wedge-shaped base portion with axially facing sealing surfaces compressed between said opposed converging side walls of said recess,

and a radially innermost seating portion extending into said passageway in radial compressive sealing engagement with the sealing surface of said valve member,

said wedge-shaped base portion intermediate said sealing surfaces having a V-groove opening toward the radially outermost wall of said recess,

and a coiled circular spring mounted in said V-groove for maintaining the axial spacing of the walls of said V-grooves at all temperatures with negligible radial loading of said seating ring,

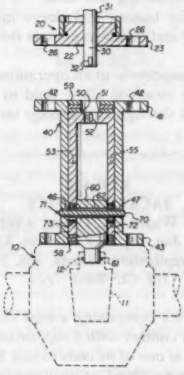
said coiled spring having a normal unstressed mean diameter slightly less than the mean diameter of said V-groove above cryogenic temperatures, and the coil diameter of said spring being equal to the spacing of the walls defining said V-groove at the mean diameter thereof above cryogenic temperatures whereby the mean diameter of the spring coincides with the mean diameter of said V-groove, and whereby incident to shrinkage of said seating ring upon exposure to cryogenic temperatures and a reduction in the mean diameter of said V-groove the mean diameter of the spring will contract to the reduced mean diameter of said V-groove thereby to maintain axial sealing contact of said base portion of said seating ring between opposing side walls of said recess.

4,195,816

VALVE ACTUATOR

Richard L. Thompson; Murray J. Hubbert, and Vernon J. Wade, all of Houston, Tex., assignors to Bettis Corporation, Houston, Tex.

Continuation-in-part of Ser. No. 787,882, Apr. 15, 1977, Pat. No. 4,120,479. This application Oct. 27, 1978, Ser. No. 955,485
Int. Cl.[2] F16K *31/524, 31/528*
U.S. Cl. 251—229 **4 Claims**



1. A valve actuator comprising:

a (cylinder carrying a) rotatable input shaft having means at one end thereof for attachment to an input sleeve;

a hollow mounting sleeve adapted to be fixed (both to said

cylinder and) to a valve, said mounting sleeve having an opposed pair of slots of L-shaped configuration through the wall thereof;

a substantially hollow input sleeve, rotatably mounted within said mounting sleeve, and having means for attachment to said input shaft (and being adapted to be attached to said piston rotatably positioned within said mounting sleeve), said input sleeve having an opposed pair of arcuately configured slots through the wall thereof;

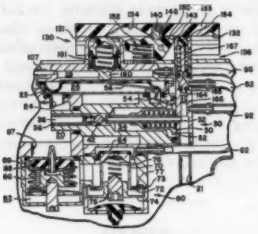
an output member axially and rotatably carried by said input sleeve, said output member carrying a pin, the opposed ends of said pin extending through both of said (respective) pairs of slots of said input sleeve and said mounting sleeve (and), said output member having means adapted to fix said output member to a valve.

4,195,817

OXYGEN REGULATOR

Robert L. Cramer, Davenport, Iowa, assignor to The Bendix Corporation, Southfield, Mich.

Division of Ser. No. 812,547, Jul. 5, 1977, Pat. No. 4,127,129.
This application Jul. 28, 1978, Ser. No. 928,673
Int. Cl.[2] F16K *1/14*
U.S. Cl. 251—340 **4 Claims**



1. A balanced valve comprising:

a housing having a supply chamber connected to a mixing chamber by a passage, said supply chamber having an inlet port, said mixing chamber having an outlet port;

a tube connected to said inlet port for communicating fluid into said supply chamber;

seat means located in said passage;

sleeve means surrounding said tube;

resilient means for biasing said sleeve means into engagement with said seat means to contain the fluid in said tube; and

actuator means responsive to an operational signal for moving said sleeve means to allow fluid to flow around said seat means and through said passage into a mixing chamber.

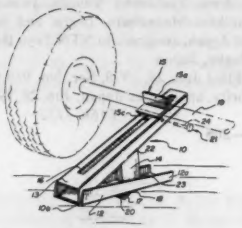
4,195,818

JACKING DEVICE

Gary C. Grimes, 17 Wapiti Dr., Devon, Alberta, Canada

Filed Jan. 25, 1979, Ser. No. 6,808
Claims priority, application Canada, Jan. 27, 1978, 295849
Int. Cl.[2] B66F *7/22*
U.S. Cl. 254—94 **8 Claims**

1. A jacking device comprising a base member adapted in part to be placed in contact with a supporting surface; a ramp member connected at one of its ends to said base member, said ramp member being provided, at its upper surface with guide means integral with said upper surface and extending longitudinally thereof; at least one intermediate supporting member extending between said base member and said ramp member thereby providing a support for said ramp at an acute angle relative to said base member; a load supporting member adapted for constrained sliding engagement with said guide means; and surface engaging means attached to an under surface of said base member so as to provide a fulcrum about which said device can pivot.

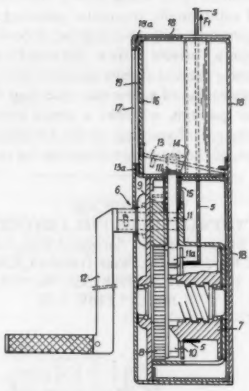


4,195,819

WINCH FOR HANDLING AN ELEVATING DOME SHAPED MEMBER OF A BUILDING HAVING A DEVICE ENABLING THE INSTANTANEOUS UNLOCKING OF THE WINCH

Roger A. H. Chastanier, Asnieres, France, assignor to Claude Le Metais, Sceaux, France, a part interest

Filed May 31, 1978, Ser. No. 911,137
Claims priority, application France, Jun. 1, 1977, 77 16759; Sep. 28, 1977, 77 29196
Int. Cl.[2] B66D *1/00*
U.S. Cl. 254—186 R **8 Claims**



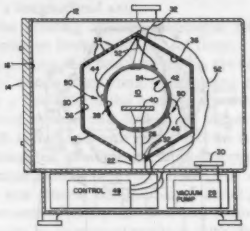
3. Winch for handling an elevating vent member of a building comprising a drum for the winch, locking means for locking the winch and an unlocking device for instantaneously unlocking the winch, wherein the locking means comprises a rod and cooperates, on the one hand, with a ratchet wheel fixed onto the winch drum and, on the other hand, with a flap and a spring engaged therewith and which is maintained in the lowered position by a breaking pane, destruction of said breaking pane freeing said flap which under action of said spring raises the locking means thereby freeing the ratchet wheel and the winch drum which permits cable to freely unroll under action of a motor means opening the vent member, a reserve of cable rolled on a further drum and coming from the winch, and means to automatically free said reserve of cable following a heat effect or a smoke emission.

4,195,820

PRECISE THERMAL PROCESSING APPARATUS

Charles A. Berg, Buckfield, Me., assignor to Pyreflex Corporation, Buckfield, Me.

Continuation of Ser. No. 895,147, Apr. 10, 1978, abandoned. This application Mar. 16, 1979, Ser. No. 21,266
Int. Cl.[2] C21D *1/34, 1/74*
U.S. Cl. 266—87 8 Claims



1. Apparatus for maintaining a workpiece at a selected precise temperature, said apparatus comprising:

a muffle of material having a high diffusivity defining an enclosed workpiece holding space, said muffle having an interior surface of high emissivity material;

an envelope surrounding and separated from said muffle and having an interior infrared radiation reflective surface;

a housing enclosing the muffle and said envelope;

means for evacuating the space bounded by the muffle and envelope;

means for removing heat from said envelope;

heater means and temperature sensing means in thermal communication with said muffle; and

control means for adjusting the heat output of the heater means in response to signals received from the temperature sensing means.

4,195,821

APPARATUS FOR REDUCING PARTICULATE IRON OXIDE TO MOLTEN IRON WITH SOLID REDUCTANT

Donald Beggs, and David C. Meissner, both of Charlotte, N.C., assignors to Midrex Corporation, Charlotte, N.C.

Division of Ser. No. 892,564, Apr. 3, 1978, which is a continuation-in-part of Ser. No. 769,242, Feb. 16, 1977, Pat. No. 4,082,543. This application Dec. 29, 1978, Ser. No. 974,648
Int. Cl.[2] C21B *1/06*
U.S. Cl. 266—156 17 Claims

1. Apparatus for reducing particulate iron oxide to molten iron with a solid reductant, said apparatus comprising:

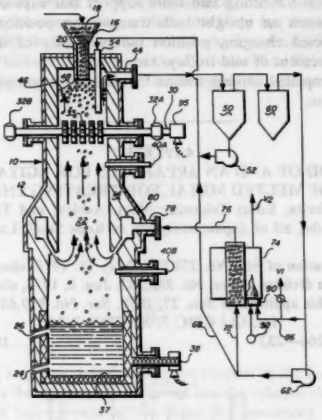
(a) a shaft furnace having a particle introducing means generally at the top thereof for establishing a gravitationally descending burden therein, a molten iron collection chamber at the bottom thereof, and molten iron removal means;

(b) an electrode positioned within said chamber adapted to contact molten metal within said chamber, at least one second electrode positioned in said furnace above said chamber and adapted to contact the particulate burden in said furnace, including an external source of electric power for passing an electric current through said burden;

(c) a gas outlet in the upper region of said furnace for removing reacted top gas;

(d) means external to said furnace for cooling and cleaning removed top gas, said cooling and cleaning means communicating with said means for removing top gas;

(e) means communicating with said top gas cooling and cleaning means and with the interior of said furnace for heating said cooled and cleaned top gas; and



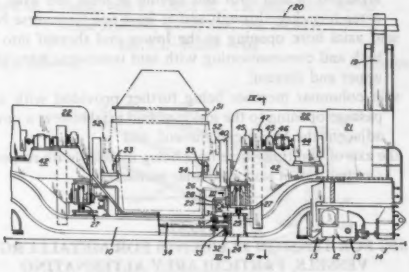
(f) means for introducing heated gas to said furnace in the lower region thereof.

4,195,822

CAR FOR TRANSPORTING A LADLE OF HOT METAL AND CHARGING THE METAL TO A FURNACE

Walter Z. Grochowski, Bethel Park, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed May 5, 1978, Ser. No. 903,344
Int. Cl.[2] C21B *3/10*
U.S. Cl. 266—165 2 Claims



1. A rail-mounted car for transporting a ladle of hot metal and charging the metal to a furnace, said car having front and back sides and being movable to a charging position in which its back side is adjacent a furnace, said car comprising:

a main frame having end portions and a central portion lower than said end portions;

a pair of spaced-apart transversely extending structural members carried by the central portion of said frame;

respective transversely extending rails and upper and lower tracks carried by said structural members;

a trolley having wheels riding on said rails and hold-down wheels riding on said tracks;

at least one fluid pressure cylinder and piston connected between said frame and said trolley for moving said trolley transversely of said frame between ladle-transporting and charging positions;

a ladle support mounted on said trolley;

at least one gear segment connected with said ladle support;

a pinion journaled on said trolley and engaging said gear segment;

drive means on said trolley operatively connected with said pinion for tilting said ladle support sideways of the car between an upright ladle-transporting position and an inclined charging position independently of transverse movement of said trolley; and

self-propelled driving means for said car mounted on said frame.

4,195,823

METHOD OF AND AN APPARATUS FOR AGITATING A BATH OF MELTED METAL FOR TREATING THE SAME

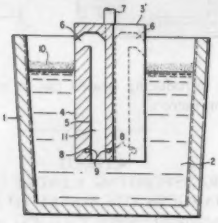
Kiichi Narita, Kobe; Takasuke Mori, Ashiya, and Takamichi Ito, Kobe, all of Japan, assignors to Kobe Steel, Ltd., Kobe, Japan

Continuation of Ser. No. 578,894, May 19, 1975, abandoned, which is a division of Ser. No. 368,283, Jun. 8, 1973, abandoned.

This application Jun. 27, 1978, Ser. No. 919,687

Int. Cl.[2] C21C *7/00*; C21B *7/16*

U.S. Cl. 266—233 **10 Claims**



1. An apparatus for agitating a bath of melted metal for treating the same, comprising

a columnar member adapted to be substantially vertically arranged in said bath and having at least one axial bore extending therethrough and at least one transverse bore;

said axial bore opening at the lower end thereof into said bath and communicating with said transverse bore at the upper end thereof;

said columnar member being further provided with a gas passage opening to the inside of said axial bore at a portion adjacent the lower end thereof; and

the axis of said transverse bore being inclined with respect to a radial line of said columnar member.

4,195,824

JIG FOR TENSION ELEMENTS FOR METALLURGIC VESSELS, PARTICULARLY ALTERNATING CONVERTERS

Wolfgang Jansa, Moers; Erhard Pfeil, Duisburg, and Paul Waldhorst, Gelsenkirchen, all of Fed. Rep. of Germany, assignors to DEMAG, Aktiengesellschaft, Duisburg, Fed. Rep. of Germany

Filed Dec. 26, 1978, Ser. No. 972,814

Claims priority, application Fed. Rep. of Germany, Jan. 27, 1978, 2803457

Int. Cl.[2] C21C *5/42*

U.S. Cl. 266—246 **10 Claims**

1. Apparatus for providing a permanently fixed tension mounting for interchangeable metallurgic converter vessels, comprising

(a) an annular support for said vessels;

(b) bearing extensions fixed on said vessels;

(c) opposed cooperating bearing surfaces on said annular support and said bearing extensions;

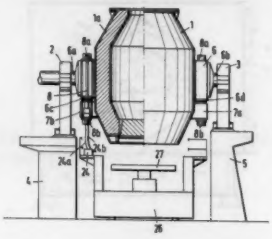
the improvement characterized by

(d) a plurality of circumferentially spaced elongated vertical tension elements extending between said opposed bearing surfaces;

(e) an anchor head on one end of each of said tension elements;

(f) a tightening nut on the opposite end of each of said tension elements from said anchor head;

(g) at least one fluid actuated piston-cylinder means concentric with each said elongated tension element; and



(h) each said piston-cylinder means extensible with the longitudinal extent of its respective tension element;

(i) whereby upon mounting a said metallurgic vessel in said annular support and the tensile force thereof going through each said anchor head, each said tension element, its respective tightening nut, and the opposed bearing surfaces from a closed circle of force.

4,195,825

COMPACT APPARATUS FOR DRILLING AND PLUGGING TAP HOLES

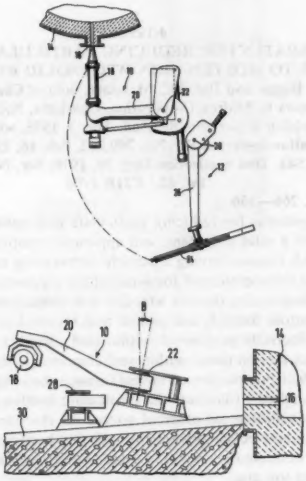
Leon Ulveling, Howald, and Jean Metz, Luxembourg, both of Luxembourg, assignors to Paul Wurth S.A., Luxembourg, Luxembourg

Filed Sep. 18, 1978, Ser. No. 943,223

Claims priority, application Luxembourg, Sep. 30, 1977, 78209

Int. Cl.[2] C21B *7/12*

U.S. Cl. 266—271 **5 Claims**



1. An installation for opening and closing a taphole of a blast furnace, the furnace having a generally vertically oriented axis,

the taphole communicating with a pouring channel whereby molten metal may be withdrawn from the furnace, the taphole and pouring channel having axes which lie in a common vertical plane, the installation comprising:

first tool means, said first tool means including plugging means for use in plugging a taphole, said plugging means having a longitudinal axis;

second tool means, said second tool means including drill means for use in opening said taphole, said drill means having a longitudinal axis;

a floor, the pouring channel associated with said taphole comprising an irregularity in said floor;

means supporting said first tool means above said floor, said first tool means supporting means being mounted on said floor at a first side of the pouring channel and including:

first pivot means, said first pivot means having an axis which is inclined with respect to the furnace axis; and

first elongated arm means, said first tool means being mounted from a first end of said first arm means, said first arm means being pivotal about said first pivot means axis whereby said first tool means may be moved between an operative position with the tool axis positioned in said common vertical plane and a retracted position, the first tool means axis being constrained to an inclined plane during such movement;

means supporting said second tool means above said floor, said second tool means supporting means being mounted on said floor on the said first side of the pouring channel and at a point displaced from said first tool means supporting means, said second tool means supporting means including:

second pivot means, said second pivot means having an axis which is inclined with respect to said common vertical plane and with respect to said first pivot means axis; and

second elongated arm means, said second tool means being mounted from a first end of said second arm means, said second arm means being pivotal about said second pivot means axis whereby said second tool means may be moved between an operative position with the second tool means axis positioned in said common vertical plane and a retracted position, the second tool means axis being constrained to an inclined plane during such movement;

the angles of inclination of said pivot means and the relative heights and the relative locations on said floor of said pivot means being selected such that the point of maximum elevation of the plane in which the axis of one of said tool means moves lies in a vertical plane through the axis of the other of said tool means when the said other of said tool means is in its retracted position.

4,195,826

ARRANGEMENT FOR A LOW-NOISE AND LOW-SHOCK INTERCEPTION OF MOVING MASSES

Robert Weinke, Munich, and Georg Wiesmeier, Weidach, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

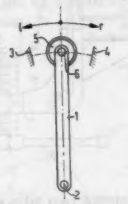
Continuation of Ser. No. 870,439, Jan. 18, 1978, abandoned. This application Apr. 24, 1979, Ser. No. 32,874

Claims priority, application Fed. Rep. of Germany, Jan. 21, 1977, 2702483

Int. Cl.[2] F16F *3/10*

U.S. Cl. 267—137 **2 Claims**

1. In a printing instrument or the like, such as a teleprinter or a printer for a data processing installation, in the field of light manufacturing of precision engineered equipment, and wherein a pivotal lever is to be set in motion from a rest condition in engagement with a fixed stop, an arrangement for retaining such lever in the rest condition while minimizing adhesion forces resisting separation from the fixed stop, and yet serving for the low-noise and low-shock interception of the moving lever upon return to such rest condition, said arrangement comprising a damping stop means on one of said lever and fixed stop for engaging a cooperating surface on the other of said lever and fixed stop to define a rest position of the lever and formed from a body consisting of elastomer (**7** or **7'**), characterized in that at the active surface of the body which is to engage the cooperating surface, the body has a metal layer (**9**, **10** or **14**), the thickness (a or d) of which is considerably less than the thickness (A or D) of the elastomer (**7** or **7'**), the metal layer being supported solely via the underlying elastomer, said



damping stop means comprising the support of the metal layer solely via the underlying elastomer and the relative thinness of the metal layer providing low-noise and low-shock interception of the moving lever upon return to said rest condition while minimizing adhesion forces resisting separation of the damping stop means from the cooperating surface in spite of a long period of dwell with the damping stop means in contact with such cooperating surface.

4,195,827

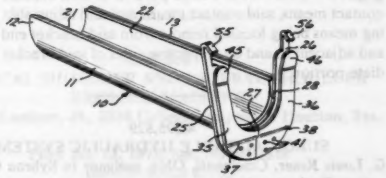
CONDUIT CUTTER

Richard G. Lyman, 408 E. 230th St., Carson, Calif. 90745

Filed Apr. 30, 1979, Ser. No. 34,621

Int. Cl.[2] B25B *7/02*

U.S. Cl. 269—2 **4 Claims**



1. Apparatus for guiding the cutting of flexible conduit by way of a saw comprising:

a handle conformed as a hollow semicircular segment having two longitudinally hinged portions aligned to pivot relative each other for defining cavity of varying lateral dimensions therebetween into which said conduit may be placed;

flexible lining means adhesively secured on the interior of said cavity to the interior surfaces thereof;

a first set of substantially J-shaped end plates respectively secured to one end of said portions in a plane substantially orthogonal to said cavity, said first set of J-shaped end plates being conformed to define an opening therebetween substantially equal to the end of said cavity; and

a second set of J-shaped end plates attached in spaced relationship over said first set of end plates to define a gap therebetween.

4,195,828

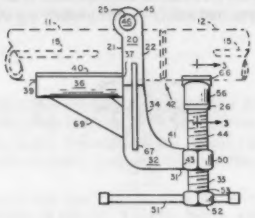
BOILER TUBE WELDING CLAMP

Donald M. Peterson, 7031 Ramoth Dr., Jacksonville, Fla. 32218

Filed Jan. 19, 1979, Ser. No. 4,752

Int. Cl.[2] B23K *37/04*

U.S. Cl. 269—43 **15 Claims**



1. A device for maintaining two adjacent tube sections in axial alignment during welding of closely spaced, parallel tubes joined by webs comprising a bracket member for receiving a tube section including spaced end portions adapted to be positioned through web cutouts in connecting webs between adjacent tubes, said bracket member including an intermediate portion having an inner surface adapted to be disposed in abutting relationship with an adjacent outer surface portion of a tube section, contact means connected to said bracket and extending laterally therefrom and including angularly disposed contact surfaces spaced from said bracket for engaging spaced peripheral outer surface portions of a tube section, releasable means engaged with said bracket end portions for caging a tube section in the space defined by said bracket end and intermediate portions and said releasable means, a brace member connected to said bracket member including an elongated portion offset from said spaced contact means and extending generally laterally away from said bracket and generally opposite of said contact means and towards an adjacent tube section adapted to be welded after end to end alignment with a tube section, and adjustable positioning means connected to said offset portion for forcibly positioning and axially aligning an adjacent tube section with a tube section adapted to be engaged with said intermediate portion of said bracket and said contact means, said contact means and said adjustable positioning means being located remote from said bracket end portions and adjacent to and on respective sides of said bracket intermediate portion.

4,195,829

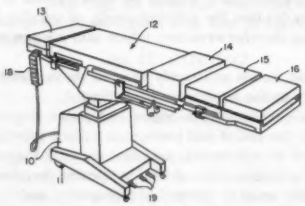
SURGICAL TABLE HYDRAULIC SYSTEM

G. Louis Reser, Cincinnati, Ohio, assignor to Sybron Corporation, Rochester, N.Y.

Filed Apr. 21, 1978, Ser. No. 898,694

Int. Cl.[2] A61G *13/00*

U.S. Cl. 269—325 **12 Claims**



1. A surgical table comprising:

a first double acting hydraulic motor connected to a vertically movable table support;

a second double acting hydraulic motor connected to a table section mounted on said support and adapted to pivot about a horizontal axis;

means for supplying hydraulic fluid under pressure to said first hydraulic motor or to said second hydraulic motor;

means for connecting either said first hydraulic motor or said second hydraulic motor to a hydraulic fluid reservoir; and

means for connecting said first motor and said second motor in series between said fluid supply means and said fluid reservoir.

4,195,830

GUIDING DEVICE FOR SEWING MATERIAL

Hans W. Lux, Kaiserslautern, and Erich Willenbacher, Rheinstetten, both of Fed. Rep. of Germany, assignors to Pfaff Industriemaschinen GmbH, Fed. Rep. of Germany

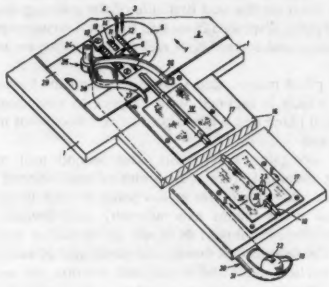
Division of Ser. No. 811,148, Jun. 28, 1977, Pat. No. 4,140,068.

This application Dec. 22, 1978, Ser. No. 972,341

Claims priority, application Fed. Rep. of Germany, Jul. 30, 1976, 7623947[U]

Int. Cl.[2] B65H *7/00*

U.S. Cl. 271—8 R **5 Claims**



1. A material guiding device, comprising a bar over which the material is to be moved, said bar extending longitudinally of the path of movement of the material, and a braking weight having a surface with a bar receiving groove of slightly greater dimension than said bar engageable over the material and the bar so that the bar with the material engages in the groove, said braking weight acting to hold the material over the bar and being slidable with the material along said bar.

4,195,831

SHEET LOADING DEVICE

Richard Sutera, Dayton, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Filed Sep. 15, 1978, Ser. No. 942,688

Int. Cl.[2] B65H *29/58*

U.S. Cl. 271—302 DAS **14 Claims**

1. A sheet loading device for supplying a sheet of material from a sheet supply station to any of a plurality of sheet supporting rotatable drum means and positioning the sheet thereon, comprising:

a plurality of sheet supporting rotatable drum means for supporting a sheet on the exterior surfaces thereof, each of said drum means defining a drum cavity and vacuum openings in said exterior surface communicating with said drum cavity,

suction means for partially evacuating each of the drum cavities to form a partial vacuum therein,

means for rotating each of said plurality of sheet supporting drum means about substantially parallel rotational axii,

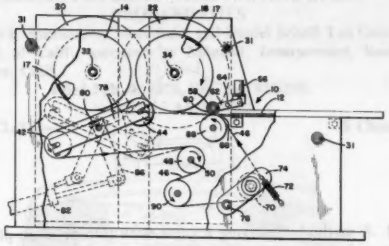
a plurality of rotatable belt deflecting rollers, each of said

rollers mounted adjacent a respective one of said plurality of sheet supporting drum means,

an endless belt passing between said plurality of belt deflecting rollers and said plurality of sheet supporting drum means, said belt further extending past said sheet supply station,

belt drive means for continuously moving said belt past said belt deflecting rollers and said sheet supply station,

sheet supply means at said sheet supply station for urging a sheet into engagement with said belt such that said sheet is



carried by said belt toward said plurality of sheet supporting drum means, and

means for selectively translating any of said plurality of belt deflecting rollers toward its respective sheet supporting drum means and deflecting said belt to wrap partially around said respective sheet supporting drum means, whereby the sheet carried by said belt is loaded onto said respective sheet supporting drum means and held on said exterior surface thereof by the partial vacuum in said drum cavity of said respective drum means.

4,195,832

X-RAY PHOTOGRAPHIC APPARATUS

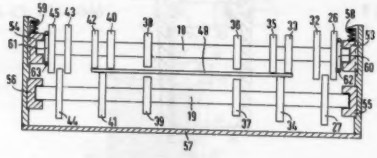
Güenter Krumrey, Weisendorf, Fed. Rep. of Germany, assignor to Siemens-Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 11, 1978, Ser. No. 941,309

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1977, 2741223

Int. Cl.[2] B65H *5/06*

U.S. Cl. 271—274 **13 Claims**



1. An X-ray photographic apparatus comprising a photographic exposure installation, comprising supply magazines for image layer carriers of varying size format, and comprising a transport path for transporting the image layer carriers between rollers, bearing in a resilient fashion against both sides of the image layer carrier, from at least one receiving location associated with the supply magazines to the photographic exposure installation, and to a release station, characterized in that the rollers (**24** through **45**, **68** through **76**), disposed on different sides of the transport plane, are axially offset relative to one another by at least one roller-width, that the track gauges of the rollers are adapted in pairs to the distance between the edges, aligned parallel to the transport direction, of each format to be transported, and that the rollers associated with a smaller format are smaller in their diameter as well as also being arranged more closely to the center of the transport path (**15**) than the rollers associated with a larger format.

4,195,833

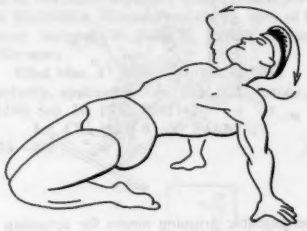
FACIAL EXERCISE AID FOR THE FACE, NECK AND JAW

Jean M. Svendsen, 9003 Cherrytree Dr., Alexandria, Va. 22309

Filed May 8, 1978, Ser. No. 904,023

Int. Cl.[2] A63B *23/00*

U.S. Cl. 272—95 **9 Claims**



1. A method of toning facial muscles and smoothing and lifting facial contours by selectively exercising certain face, neck and jaw muscles comprising:

a. Securing a weighted headband around the head above the ears with the weights disposed along the band frontally and substantially from ear to ear,

b. Positioning the body so that the shoulders are generally parallel to the floor and the upper body is rearwardly inclined toward a generally horizontal position and with the head tilted backwardly and downwardly as far as possible,

c. Assuming a selected facial expression by contracting certain facial muscles which are intended to be exercised,

d. Slowly raising the head face forward until the chin is as close as possible to the chest, then lowering the head and repeating this step at least three times while maintaining the selected facial expression with the muscles contracted.

4,195,834

VERTICAL SHOULDER AND LATERAL SHOULDER EXERCISE MACHINE

Lloyd J. Lambert, Jr., 1538 College Ave., South Houston, Tex. 77587

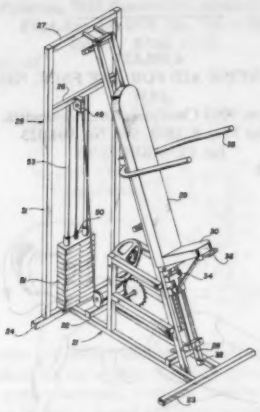
Filed Jul. 12, 1978, Ser. No. 923,818

Int. Cl.[2] A63B *23/02*

U.S. Cl. 272—118 **5 Claims**

1. In an exercising machine, a horizontally disposed base, an upright frame supported on said base, an incline bench operatively connected to said base, a seat adjustably connected to said bench, manually operable means for adjusting said seat defined by spaced parallel rod members (**61**) pivotally connected at a top extremity to inclined support pieces (**28**) and at a bottom extremity to said inclined support pieces through a biased pin(**55**) extending through an opening on said inclined support pieces so that said rod members are naturally drawn to said inclined support pieces, an H-shaped frame member (**60**) slideably disposed on said rod members having a reset locking mechanism on a back face thereof and a seat support on a top face provided with a handle whereby pulling on said handle tensions said biased pin and unlatches said reset locking mechanism so that said H frame can slide on said rod members adjusting said seat, and when said handle is released said biased pin causes said reset locking mechanism to be latched, weight

means for said machine, cam means on said machine, chain and sprocket means operatively connected to said cam means, and



manually engageable gripping means for actuating said cam means and said weight means.

4,195,835

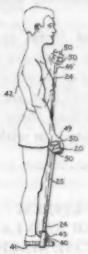
ELASTIC CABLE EXERCISER BAR

Robert S. Hinds, 1803 Regent St., Madison, Wis. 53705, and John M. Diehl, Madison, Wis., assignors to Robert S. Hinds, Madison, Wis.

Filed Dec. 30, 1976, Ser. No. 755,552

Int. Cl.[2] A63B *21/02*

U.S. Cl. 272—137 **4 Claims**



1. In an exercise device comprising an elastic cable and a laterally extending bar to which the cable may be attached to provide a downwardly extending run of cable at each end of the bar, the combination of:

said bar being a lever-like piece of material having considerable rigidity and of elongated configuration for being gripped by both hands of a user and being provided with a longitudinally extending groove in its upper surface,

said groove extending from substantially the point of contact of said cable with said bar adjacent one end of said bar to substantially the point of contact of said cable with said bar adjacent the other end of said bar, said groove being adapted to receive said cable,

a pair of finger-like members configured as bifurcations adapted for receiving convolutions of said cable and for permitting the cable to pass therethrough during an exercise program and comprising each of the ends of said bar and which extend from the two opposite sides of said groove to beyond the ends of said groove,

whereby upon rotation of said bar with said cable received in said groove, said cable is received around one of said finger-like members and is thereby prevented from being removed from said groove.

4,195,836

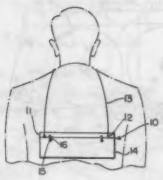
GAME AND APPARATUS THEREFOR

David M. Beyer, 1701 W. Marshall St., Norristown, Pa. 19401

Continuation-in-part of Ser. No. 750,168, Dec. 13, 1976, abandoned. This application May 5, 1978, Ser. No. 903,127

Int. Cl.[2] A63F *9/00*

U.S. Cl. 273—1 R **7 Claims**



1. A method of playing a game with two or more players comprising disposing a rigid flat and rectangular display panel on the back of a player such that the panel is out of view of the player and will remain in position on the player while the player moves about, providing a plurality of cards each having information on one face thereof in various predetermined categories and each card shaped to be mounted on the display panel, detachably mounting a card on the display panel by engaging holes in a card with hook means on the panel such that the player cannot see the information on the card on his back but the information is visible to the other players, and removing the card from the display panel after the player wearing the card has tried to ascertain the information on his card by asking questions of the other players.

4,195,837

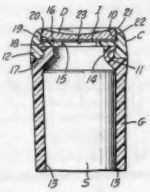
GOLF CLUB GRIP

Raymond J. Poulin, Topanga, Calif., assignor to Tacki-Mac Grips, Inc., Canoga Park, Calif.

Filed Aug. 11, 1978, Ser. No. 933,104

Int. Cl.[2] A63B *53/14*

U.S. Cl. 273—81 R **2 Claims**



1. For assembly to the shaft of a golf club, utilizing solvent or cement requiring evaporation for setting, a combination comprising,

a generally tubular grip of plastic material adapted to be sleeved over the shaft and secured thereto by the solvent or cement,

a cap having,

an annular flange concentric with and abutting one end of said grip,

an opening extending entirely through said flange placing the interior of the grip in communication with atmosphere to permit evaporation of the solvent or cement,

an annular inner rim integral with said flange extending axially toward and about said one end of said grip fixedly secured thereto,

an annular outer rim integral with said flange extending

thereabout on the opposite side of said flange from said inner rim;

a disk bearing selected indicia, seatable on said flange on the opposite side thereof from said grip; and

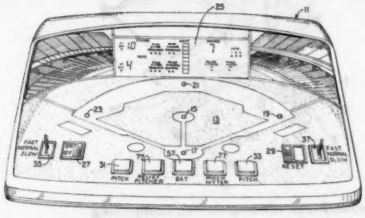
locking means on said outer rim, enabling insertion of said disk within said outer rim, for locking said disk in seated position on said flange closing said opening.

4,195,838

ELECTRONIC GAME WITH VARYING EVENT PROBABILITIES

Joseph F. Santandrea, Sunnyvale, and Daniel Schell, Los Gatos, both of Calif., assignors to Monosil, Incorporated, Santa Clara, Calif.

Filed Feb. 9, 1978, Ser. No. 876,510
Int. Cl.[2] A63F *9/00*
U.S. Cl. 273—88 **8 Claims**



3. An electronic baseball game for playing by two players, comprising:

means responsive to initiation of the player at bat for randomly determining with set probabilities a particular batting event, and

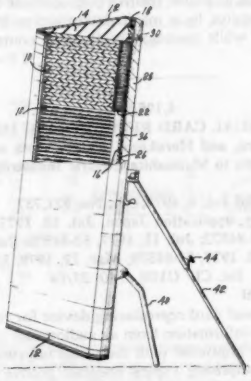
means responsive to player control for temporarily altering the probabilities for only a few times at bat and for only a set number of times per game.

4,195,839

PROJECTILE TARGET WITH REMOVABLE RODS

Wilbrod Rodrigue, 85 Barton St., East, Hamilton, Ontario L8L 2N1, Canada

Filed Dec. 22, 1978, Ser. No. 972,333
Int. Cl.[2] F41J *3/00*
U.S. Cl. 273—346 **5 Claims**



1. A target for projectiles comprising:

(a) a base plate;

(b) a plurality of studs mounted on said base plate parallel to each other;

(c) a plurality of rods bundled together and each rod having one end removably secured to the end of said studs and the other end facing in the direction from which the projectiles are launched; and

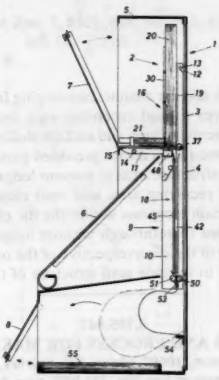
(d) means on the periphery of said bundle of rods for holding the rods under compression.

4,195,840

TARGET CHANGER FOR USE ON A SHOOTING RANGE

Ernst K. Spieth, Fritz-Müller-Strasse 145, 7301 Esslingen-Zell, Fed. Rep. of Germany; Bernhard Murso, Esslingen-Zell, and Eberhard Riedmüller, Blaubeuren-Seissen, both of Fed. Rep. of Germany, assignors to Ernst K. Spieth, Esslingen, Fed. Rep. of Germany

Filed Mar. 17, 1978, Ser. No. 887,905
Claims priority, application Fed. Rep. of Germany, Mar. 25, 1977, 2713364; Sep. 16, 1977, 2741743
Int. Cl.[2] A63B *63/00*; F41J *1/14*
U.S. Cl. 273—406 **20 Claims**



1. A target changer for use on a shooting range comprising

(a) a window;

(b) a supply magazine disposed above the level of said window and adapted to receive a stack of individual targets;

(c) a vertical main target guide disposed behind said window;

(d) a used target receiver disposed beneath the level of said window for receiving the targets discharged downwardly out of said main target guide;

(e) a first feed mechanism driven by electric motor drive means for conveying the respective first target of the stack to said vertical main target guide; and

(f) a pair of conveyor rollers disposed at the lower end of said main target guide as a support for the lower edge of the target disposed in said main target guide and driven by electric motor drive means for positively conveying said target out of said main target guide to said used target receiver.

4,195,841

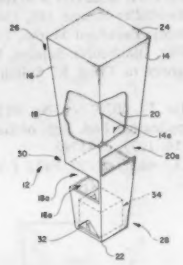
DIE CHANNEL DESIGN WITH ANTI-DIE LODGING PROVISION

William E. Woodall, Jr., 207 E. Morgan St., Benson, N.C. 27504

Filed Aug. 28, 1978, Ser. No. 937,142
Int. Cl.[2] A63F *9/04*
U.S. Cl. 273—145 C **8 Claims**

1. A die and die channel designed for allowing the die in the form of a cube to move back and forth between respective ends thereof without lodging, the die channel comprising a side wall

structure with two end portions that define an interior space therein where the die can move back and forth between ends thereof; said die channel about one end portion including a die shaking and tumbling area and wherein the cross sectional area thereof is substantially greater than the cross sectional area of said die; formed about the other end portion is a die receiving area that includes a cross sectional area just slightly greater in cross sectional area than the die and of a corresponding shape in order that the selected die when disposed in the receiving area snugly fits within the adjacent side wall structure of the



die channel with said die channel converging from said shaking and tumbling area to said receiving area; intermediately between said die receiving area and said die shaking and tumbling area there is formed void means provided partially about sides of said side wall structure so as to prevent lodging of a die prior to reaching said receiving area, said void means providing an open area at certain locations within the die channel that enables the die to pass therethrough without lodging on the short or long diagonal of the die irrespective of the orientation of the die with respect to the side wall structure of the die channel.

4,195,842

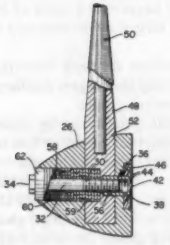
GOLF CLUB AND PROCESS FOR MAKING SAME

Marvin W. Coleman, 10607 Moore St., Fairfax, Va. 22030

Continuation-in-part of Ser. No. 711,960, Aug. 5, 1976, Pat. No. 4,067,572. This application Jan. 9, 1978, Ser. No. 867,872

Int. Cl.[2] A63B *53/02*

U.S. Cl. 273—171 **15 Claims**



1. A golf club, including:

(a) a shaft

(b) a club head assembly, including a club head body having a striking face

(c) said club head body being provided with a longitudinal bore extending from the striking face to the aft end thereof

(d) a weight member positioned in the longitudinal bore behind the ball-engaging portion of the club head's striking face, and

(e) a hosel, one end of which is fixed to an end of said shaft

(f) the opposite end of said hosel extending through said club head body

(g) said opposite end of said hosel having a transverse bore through which said weight member passes.

4,195,843

SIMPLIFIED MOTOR ASSEMBLY AND RELATED ELECTRICAL CONNECTION IN A SOUND REPRODUCING DEVICE

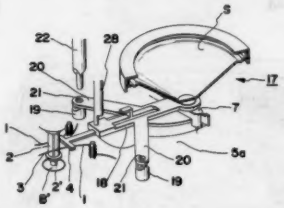
Katsumi Watanabe; Yutaka Shiseki, both of Kawasaki, and Eishi Koike, Sagamihara, all of Japan, assignors to Ozen Co., Ltd., Tokyo, Japan

Filed Jul. 28, 1978, Ser. No. 928,800

Claims priority, application Japan, Mar. 31, 1978, 53-37867; Apr. 12, 1978, 53-42877

Int. Cl.[2] G11B *3/00*

U.S. Cl. 274—1 A **8 Claims**



1. A sound reproducing device comprising:

(a) a casing having a housing and a chassis;

(b) an electric motor disposed on the chassis and comprising at least one brush and a commutator, the brush being in electrical mating contact with the commutator;

(c) a turntable driven by the electric motor;

(d) a pickup arm pivotally movably mounted on the chassis at one end thereof;

(e) a stylus which is engagable with a groove of a record disc and which is carried at the lower face of the free end of the pickup arm;

(f) means for normally biasing the pickup arm toward the initiating position of sound reproduction;

(g) a speaker mounted on the pickup arm and being in contact therewith, the speaker being swingably carried by the pickup arm;

(h) means for urging the pickup arm toward the face of the record disc;

(i) a switch for actuating the electric motor; and

(j) an actuating means coupled to the brush and commutator of the motor to enable relative displacement of the brush and commutator by a manipulating action from outside the casing, while maintaining electrical contact therebetween.

4,195,844

AUDIOVISUAL CARD REPRODUCING DEVICE

Yasushi Okamura, and Harukazu Manabe, both of Fukuoka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 3, 1978, Ser. No. 921,737

Claims priority, application Japan, Jul. 13, 1977, 52-84571; Jul. 13, 1977, 52-84572; Jul. 13, 1977, 52-84573; Jul. 13, 1977, 52-84574; Jul. 13, 1977, 52-84575; Mar. 22, 1978, 53-37017[U]

Int. Cl.[2] G11B *3/40, 25/04*

U.S. Cl. 274—9 B **5 Claims**

1. An audiovisual card reproducing device for reproducing visual and audio information from an audiovisual card having an upper surface imprinted with the visual information and a lower surface comprising a spiral program groove containing audio information, said device comprising:

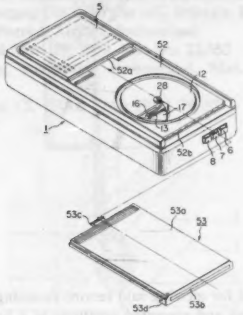
a cabinet having a slit for receiving said card in a horizontal position;

a turntable rotatable in a horizontal plane below said program groove and having an upper surface in juxtaposition therewith, said turntable having a hole therein disposed between the center and the periphery of the turntable;

pilot pin means for vertically aligning the center of said program groove with the axis of rotation of said turntable;

a tone arm pivotally mounted to the lower surface of said turntable for rotation therewith in a horizontal plane, and for rotation with respect to said turntable about horizontal and vertical axes adjacent the turntable periphery;

a card ejection member disposed in said slit in said cabinet so that when said audiovisual card is inserted into said slit, said card ejection member engages said card and is displaced to the operative position thereof as said card is pushed toward said horizontal receiving position;



a play-slide plate movable between an off position and a reproduce position;

a stopper disposed adjacent said play-slide plate and operatively coupled to said card ejection member to lock said play-slide plate in the off position thereof, so as to prevent movement thereof when no audiovisual card is disposed in said cabinet; and

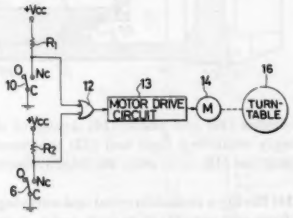
means operative only when said play-slide plate is in the reproduce position thereof, for rotating said turntable and causing said tone arm to pivot about said horizontal axis, so that said tone arm extends through said turntable hole to engage said program groove.

4,195,845

TURNTABLE ROTATION CONTROLLING APPARATUS

Shizuo Inaba, Tokorozawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Sep. 18, 1978, Ser. No. 943,495
Claims priority, application Japan, Sep. 20, 1977, 52-112938
Int. Cl.[2] G11B *3/00*
U.S. Cl. 274—9 R **3 Claims**



1. In a device for use in a record player including a turntable, a horizontally and vertically movable tone arm, an arm rest for resting said tone arm thereon, the improvement comprising:

(a) first detecting means for detecting the horizontal movement of said tone arm from said arm rest, said first detecting means including first switch means and an actuating member integral with said tone arm for actuating said first switch means to produce a first signal when said tone arm is moved horizontally from said arm rest;

(b) second detecting means for detecting the vertical movement of said tone arm, said second detecting means including second switch means and vertically movable tone arm elevating means for elevating said tone arm from said arm rest, said second switch means being directly actuated by said elevation means upon upward movement thereof to produce a second signal independent of said first signal;

(c) a logic gate circuit responsive to either of said first and second signals for producing an output signal; and

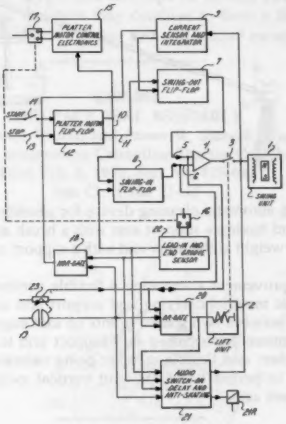
(d) a driving circuit connected to said logic circuit and responsive to said output signal for driving said turntable.

4,195,846

PHONOGRAPH TURNTABLE CONTROL SYSTEM

Harry Gaus, Kronberg; Udo Milutziki, Walldorf, and Dietwald Schotte, Eschborn, all of Fed. Rep. of Germany, assignors to Braun Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 7, 1978, Ser. No. 913,033
Int. Cl.[2] G11B *17/06*
U.S. Cl. 274—15 R **17 Claims**



1. In an automatic turntable control system for phonographs, of the type including lifting means for lifting and lowering the tone arm of the turntable, swinging means for swinging the tone arm of the turntable inward and outward, and a platter motor for rotating the platter of the turntable, in combination therewith, a first flip-flop having a first state and a second state; means connected to the platter motor and to the first flip-flop and operative for causing the platter motor to operate or not operate in dependence upon the state of the first flip-flop; start-stop switch means operative when activated by the user to start the turntable for setting the first flip-flop to the first state thereof and operative when activated by the user to stop the turntable for setting the first flip-flop to the second state thereof; a second flip-flop connected to the first flip-flop and having a first state and a second state and connected to assume its first state when the first flip-flop assumes the second state thereof, a third flip-flop connected to the first flip-flop and having a first state and a second state and operative for assuming its first state when the first flip-flop assumes the second state thereof; switch means connecting the swinging means to the second and third flip-flops, and operative when conductive for transmitting from the second flip-flop to the swinging means an activating signal causing the swinging means to

swing in the tone arm when the second flip-flop is in the first state thereof, and for transmitting from the third flip-flop to the swing means an activating signal causing the swinging means to swing out the tone arm when the third flip-flop is in the first state thereof; switch-control means connected to the switch means and to the lift means and operative for rendering the switch means conductive when the lift means has lifted the tone arm; lift-tone-arm switch means operative when activated by the user for generating a lift-tone-arm command signal; and OR-gate means having an output connected to the lift means and having inputs connected to the lift-tone-arm switch, to the second flip-flop and to the third flip-flop and operative for transmitting an activating signal to the lift means in response to the lift-tone-arm command signal, in response to assumption of the first state by the second flip-flop, and in response to assumption of the first state by the third flip-flop.

4,195,847

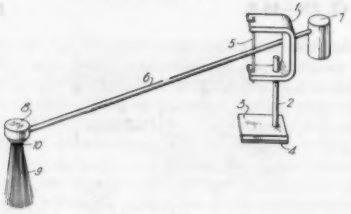
CLEANING DEVICE FOR PHONOGRAPH RECORDS

Bernard J. Nunn, Apt. 2, 303 Cambridge St., Ottawa, Ontario K1R 7B3, Canada

Filed Aug. 17, 1978, Ser. No. 943,699

Int. Cl.[2] G11B *3/58*

U.S. Cl. 274—47 **7 Claims**



1. In an automatic cleaning device for phonograph records, of the kind having a support arm with a brush at one end and a counterweight at the other and with a support member therebetween;

the improvement comprising a flexible vertical member of elastic material carrying said support arm and being carried between two spaced points on said support member, and means for securing said support arm to said flexible member; said flexible member being twistable and bendable to permit horizontal and vertical swinging of said support arm.

4,195,848

SPINDLE ADAPTORS

Barrington Hares, Great Barr, England, assignor to BSR Limited, Cradley Heath, England

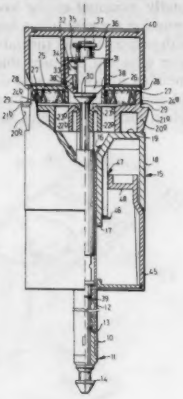
Filed Jan. 11, 1978, Ser. No. 868,496

Claims priority, application United Kingdom, Jan. 11, 1977, 841/77

Int. Cl.[2] G11B *17/04*

U.S. Cl. 274—10 S **8 Claims**

1. A spindle adaptor for a record player comprising a spindle adapted at its lower end to be received in a spindle receiving means of a record player, a body member carried at the upper end of the spindle, record supporting means mounted in the body member for movement between an extended position in which said means extend outwardly of the body to support a stack of large centre hole records and a retracted position to allow a record to descend along the body, record retaining means mounted in the body member for movement between an extended position in which said means extend outwardly of the body temporarily to support a remainder of the stack of large centre hole records when the support means is in its retracted position and a retracted position to permit free passage of said records along the body, a control member movable longitudinally within the spindle, a first cam member mounted on the control member within the body and axially slidable relative to the control member, a second cam member fixedly mounted on the control member within the body, means normally to resiliently bias the first cam member in a direction towards the lower end of the spindle, means for maintaining said record retaining means in abutting relationship with said first cam



member and for moving said record retaining means between said extended and retracted positions as a function of movement of the first cam member and means for maintaining said record supporting means in abutting relationship with said second cam member and for moving said record supporting means between said extended and retracted positions as a function of movement of the second cam member.

4,195,849

PISTON FLUID SEAL MOUNTING

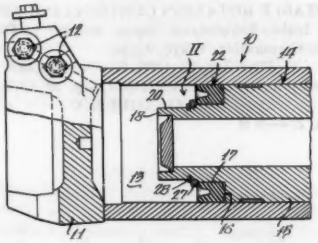
Morris E. Taft, Metamora, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US79/00091, § 371 Date Feb. 15, 1979, § 102(e) Date Feb. 15, 1979

This PCT application Filed Feb. 15, 1979, Ser. No. 30,243

Int. Cl.[2] F16J *15/32*

U.S. Cl. 277—12 **3 Claims**



1. In a cylinder **(10)** and piston **(14)** device of the type in which a snugly encircling fluid seal **(22)** is mounted on the piston **(14)** near one **(18)** of its ends, the improvement comprising:

a piston **(14)** having a circumferential seal-carrying band **(17)** spaced from said one **(18)** of its ends, and a circumferential step **(19)** defining a piston end portion **(20)** which is smaller in diameter than said band **(17)**, and there being a circumferential snap-ring groove **(21)** in said piston end portion **(20)** close to said step **(19)**;

a stressed fluid seal **(22)** mounted on said band **(17)**, said fluid seal **(22)** having an unstressed internal diameter (across **25**)

less than that of said band (17) but greater than that of said piston end portion (20);

a fluid seal retaining ring (27) between the step (19) and the snap-ring groove (21), said retaining ring (27) projecting radially past the surface of the band (17) but having no part of larger diameter than the inside diameter of the cylinder (10);

and a snap-ring (28) in the groove (21) to hold said retaining ring (27) adjacent the step (19).

4,195,850

GASKET STRIP FOR BUTT JOINT COMPRESSION SEAL

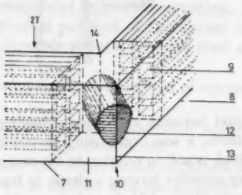
Ernst Berger, Altdorf, and Norbert Herwegh, Schattdorf, both of Switzerland, assignors to Datwyler AG, Schweiz. Kabel-Gummi-u.Kunststoffwerke, Altdorf, Switzerland

Filed Mar. 19, 1979, Ser. No. 22,053

Claims priority, application Switzerland, Mar. 23, 1978, 32418/78

Int. Cl.² E04B *1/68*; F16J *15/10*

U.S. Cl. 277—12 **8 Claims**



1. A gasket strip of a first material for forming a compression seal between abutting end faces of adjoining building elements, the building elements having a polygonal cross-section with flat faces along the perimeter, the gasket strip extending in the manner of a frame about the perimeter of the building element, the improvement therein comprising:

at least one section of said gasket strip which is of a second material, more elastic than the first material making up the remainder of said gasket strip, said second material defining a depression, and

a third material lying at least partially in the depression in said second material and plastically deformable under pressure.

4,195,851

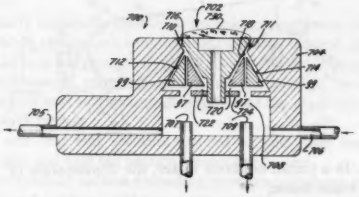
SYSTEM FOR FORMING A FLUID-TIGHT SEAL

Henry Fleischer, 18 Notch Park Rd., Little Falls, N.J. 07424

Division of Ser. No. 659,370, Feb. 19, 1976, Pat. No. 4,108,475, which is a division of Ser. No. 479,667, Jun. 17, 1974, abandoned, which is a continuation-in-part of Ser. No. 427,149, Dec. 21, 1973, abandoned. This application Jun. 29, 1978, Ser. No. 920,404

Int. Cl.² F16J *15/02, 15/40*

U.S. Cl. 277—27 **3 Claims**



1. A system for forming a fluid-tight seal between a first member and a second member, comprising a first member including internal walls defining an inclined annular surface, and a second member including external walls defining an inclined annular surface, said second member being adapted to be seated and retained in said first member to provide a tapered annular chamber defined by said internal inclined annular surface of said first member and said external inclined annular surface of said second member, fluid inlet means connected to said first member or said second member, fluid outlet means connected to said first member or said second member, and at least two annular gasket members concentrically disposed about each other and said second member and positioned in said tapered annular chamber defined by the inclined annular surfaces of said first and second members, one of said gasket members including an inclined surface which substantially matches and is adapted to contact the inclined annular surface of said first member, and a second of said gasket members including an inclined surface which substantially matches and is adapted to contact the inclined annular surface of said second member, so that when said second member is seated in said first member and fluid is allowed to flow through said fluid inlet into contact with said gasket members, said gasket members are forced by fluid pressure into contact with each other and the walls of said tapered annular chamber to define a first position of said gasket members with respect to said tapered annular chamber and to thereby form a fluid-tight seal between the first member and the second member, and after surfaces of said gasket members wear, said gasket members are automatically adjusted in position and are moved by fluid pressure to a second position deeper into said tapered annular chamber so that said gasket members may continue to form a fluid-tight seal between said first member and said second member.

4,195,852

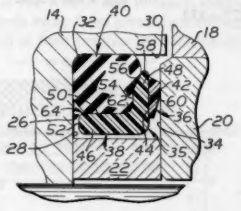
END FACE SEAL ASSEMBLY

Robert D. Roley, Peoria, and James R. Sturges, Washington, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Feb. 6, 1978, Ser. No. 875,490

Int. Cl.² F16J *15/38*

U.S. Cl. 277—92 **24 Claims**



1. An end face seal assembly (10) having an axis (24), comprising:

seal ring means (36) of a first material having a hardness magnitude in a range of about 40–50 on the durometer "D" scale for sealing, said seal ring means (36) having an annular axially outwardly facing sealing lip (42);

support ring means (38) of a second relatively rigid material for holding said seal ring means (36), said support ring means (38) having a generally L-shaped cross sectional configuration; and

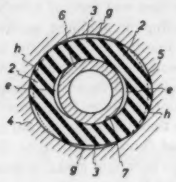
load ring means (40) of a third material having a hardness magnitude in a range of about 40–70 on the durometer "A" scale for sealingly engaging, supporting, and solely urging said support ring means (38) in an axial direction when compressed, said seal ring means (36), support ring means (38) and load ring means (40) being disposed generally concentrically on said axis (24), said first material being different than said third material, and said second material being different and having greater rigidity than said first and third materials.

4,195,853

MECHANICAL SHAFT SEAL

Junji Otsuka, Okabe, Japan, assignor to Nippon Oil Seal Industry Co., Ltd., Tokyo, Japan

Filed Sep. 21, 1978, Ser. No. 944,314
Claims priority, application Japan, Dec. 20, 1977, 52-170603
Int. Cl.[2] F16J *15/34*
U.S. Cl. 277—92 2 Claims



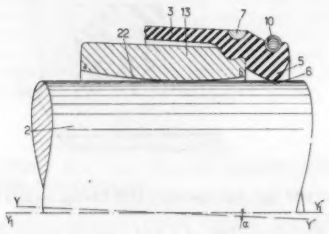
1. A mechanical shaft seal having a seal ring disposed between a housing and a floating seat and made of an elastic material such as rubber, characterized in that said seal ring has a curvilinear shape having portions of different diameters, wherein the maximum outer diameter of said seal ring is larger than the inner diameter of the peripheral surface of a stepped recess formed in said housing, while the minimum inner diameter of said seal ring is smaller than the outer diameter of the peripheral surface of a stepped recess formed on said floating seat.

4,195,854

SHAFT SEAL ASSEMBLIES

Jacques Bertin, 19, rue du Tintoret, 92600 Asnieres, France

Continuation-in-part of Ser. No. 622,227, Oct. 14, 1975, Pat. No. 4,102,538. This application May 11, 1978, Ser. No. 904,891
Claims priority, application France, May 11, 1977, 77 14434
Int. Cl.[2] F16J *15/32*
U.S. Cl. 277—153 10 Claims



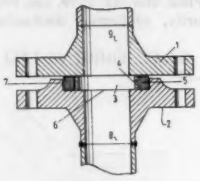
1. A shaft seal assembly for a shaft or the like relatively movable with respect to a housing and comprising
a rigid frame fixed in the housing and having a stop;
a ring member surrounding the shaft when said assembly is operably installed and axially engagable with said stop;
an elastomeric sleeve having a main body portion and a central bore therethrough through which the shaft can pass, said sleeve being borne by said frame around said ring member and having at least one lip integral with said main body portion for being in contact with the shaft and a section of said main body portion axially spaced from said lip which bears on said ring member, said ring member being located between said lip and said stop,
and resilient means for exerting an axial force on said ring member to maintain axial contact between said ring member and said stop and for preventing axial movement of said sleeve particularly under pressure differences between each side of said sleeve.

4,195,855

SEAL FOR SEALING FLANGES AND OTHER OBJECTS

Johannes G. van Haren, Naarden, and Karel L. Buisman, Jutphaas, both of Netherlands, assignors to Ultra Centrifuge Nederland N.V., The Hague, Netherlands

Continuation of Ser. No. 641,888, Dec. 18, 1975, abandoned. This application Apr. 26, 1978, Ser. No. 900,310
Claims priority, application Netherlands, Jan. 20, 1975, 7500619
Int. Cl.[2] B65D *53/00;* F16L *19/02*
U.S. Cl. 277—166 2 Claims



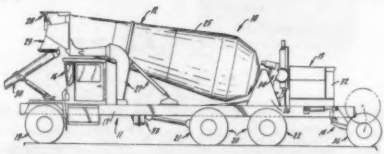
1. In a joint between two flanges having parallel opposed sealing surfaces, a seal comprising an annular metal packing member which is soft in relation to the material of the flanges, said packing member having a shape in transverse section of two oppositely directed U-shaped rings which face toward the respective flanges and which have a common wall so as to provide between the said wall and two other, outlying walls, two annular spaces, said metal packing member having on each side three axially facing, ridged surfaces, each of said ridged surfaces being in sealing engagement with the sealing surfaces of the respective flanges, and an annular elastic backing ring in each of said spaces and engaging the sealing surface of the respective flange and the walls of the respective space, the sealing surface of one of the flanges being planar and the sealing surface of the other flange having a cylindrical recess in which said seal is fitted, said recess having an outer upright edge which engages and laterally supports the outer circumference of said seal, the height of said edge being smaller than the height of the U-shaped rings.

4,195,856

HIGH LIFT TAG AXLE LOAD TRANSFER SYSTEM

Thomas A. Larson; Donald H. Verhoff, and Wallace J. Blank, all of Oshkosh, Wis., assignors to Oshkosh Truck Corporation, Oshkosh, Wis.

Filed Mar. 1, 1978, Ser. No. 882,366
Int. Cl.[2] B60S *9/12*
U.S. Cl. 280—81 R 11 Claims



1. In a transit concrete mixer, the combination of
a truck frame,
forward steerable wheel means mounted on the truck frame,
first rear wheel means mounted on the truck frame,
a concrete mixer mounted on the truck frame, and
means for transferring load away from the first rear wheel means, or the first rear wheel means and the forward steerable wheel means, and thereby increasing the load

span of said transit concrete mixer whether rear or front discharging,

said load transfer means including a load transfer system having

second rear wheel means rearwardly of said first means, said second rear wheel means being pivotally mounted to the truck frame by

pivot means carried by the truck frame and generally transversely horizontally axially disposed with respect to the longitudinal axis of the truck frame, and

a pair of hydraulic cylinder means pivotally mounted on the truck frame, one on each side thereof

the pivot point between the truck frame and each one of said pair of hydraulic cylinder means being located beneath the top of the truck frame,

said second rear wheel means including two individual portions, one on each side of the truck frame

the reciprocating end of each one of said pair of hydraulic cylinder means being connected to its associated portion of the second rear wheel means so as to pivot said second rear wheel means about its pivotal mounting,

each of the individual portions of the second rear wheel means being pivotable about a common shaft means, and

control means for

raising the second rear wheel means out of contact with the ground,

lowering the second rear wheel means from a raised position to a ground contacting position, and

loading said second rear wheel means while said second rear wheel means are in contact with the ground,

whereby at least a portion of the load carried by the first rear wheel means, or the first rear wheel means and the forward steerable wheel means, is transferred to the second rear wheel means.

4,195,857

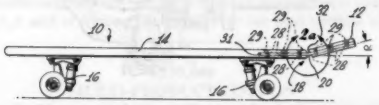
SKATEBOARD WITH ADJUSTABLE TAIL SECTION

Albert R. Hechinger, 11944 Weir St., Culver City, Calif. 90230

Filed Aug. 7, 1978, Ser. No. 931,366

Int. Cl.[2] A63C *17/00*

U.S. Cl. 280—87.04 A **7 Claims**



1. A skateboard comprising:

an elongated platform having a main body section and a rear tail section angularly movable relative to said main body section;

an angularly adjustable joint coupling said tail section to said main body section as a longitudinal extension thereof, said joint having an elongated plate with sufficient strength and stiffness to resist bending under the normal forces exerted on said tail section during use of the skateboard, said plate having

front and rear end sections secured to said main body section and said tail section, respectively, and

an intermediate section extending between said front and rear end sections, said intermediate section being bendable to a preselected angle to hold said tail section at said preselected angle relative to said body section; and

wheel assemblies mounted on the bottom side of said main body section, in longitudinally spaced relation with each other and with the ends of said platform.

4,195,858

STEERING LINKAGES AND VEHICLES INCORPORATING THEM

Stephen P. Goodacre, Basingstoke, England, assignor to Lansing Bagnall Limited, Hampshire, England

Filed Nov. 17, 1978, Ser. No. 961,854

Claims priority, application United Kingdom, Nov. 25, 1977, 49249/77

Int. Cl.[2] B62D *3/02*

U.S. Cl. 280—95 R **14 Claims**

1. A steering linkage for a pair of wheels which have upright pivot axes, comprising, for each wheel:

a member which is disposed to rotate with the wheel;

an intermediate link one end of which is pivotally connected to said member at a point spaced from the respective pivot axis;

a control link which at one end is pivoted about a fixed axis and has a pivotal connection to the other end of the respective intermediate link, the distance between the fixed axis and the connection between the control link and the intermediate link being greater than the distance between the pivot axis and the pivotal connection between the said member and the intermediate link;

and a means which connects the said control links, the arrangement being such that when the wheels are parallel, the said links are substantially symmetrical about the bisector of a notional line joining the pivot axes of the wheels and each wheel can be rotated for at least 180° about its respective pivot axis, and such that the turning circles of the wheels have a common centre which lies on a notional line parallel to the said notional line that joins the pivot axes of the wheels and for each steering movement of the wheels away from parallelism moves along its notional line and at least reaches the said bisector.

4,195,859

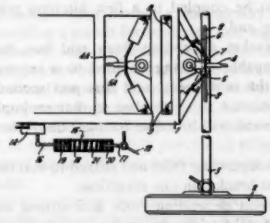
VEHICLE SUSPENSION

Nestor E. Kyriacou, P.O. Box 102, Limassol, Cyprus

Filed Oct. 22, 1976, Ser. No. 735,056

Int. Cl.[2] B62D *65/00*

U.S. Cl. 280—112 R **21 Claims**



1. A wheeled vehicle, at least one wheel of which is mounted on an axle connected to the body structure of said vehicle by a suspension system which comprises:

an elongated lever arranged transversely with respect to said body structure;

means for pivotably connecting said lever to said body structure on the longitudinal center line thereof whereby the ends of said lever move in a plane substantially normal to the surface upon which said wheels are supported;

an elongated suspension member pivotably connected at one end to said body structure, said axle being mounted to said suspension member;

means slidably coupling the other end of said suspension member to said lever, said slidable coupling means permitting motion of said coupling means and said other end of said suspension member with respect to the longitudinal dimension of said lever;

spring means urging said wheel downwardly with respect to said body structure; and

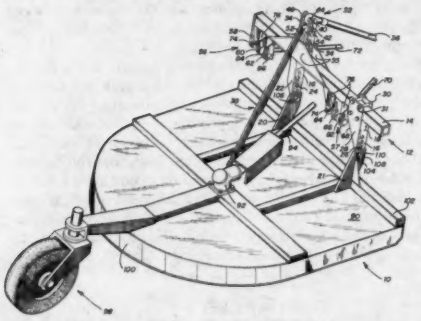
sway guide means formed with guide surfaces disposed on opposite sides of said suspension member, said sway guide means being mounted to said body structure for restricting lateral, while permitting vertical, displacement of said coupling means and said other end of said suspension member with respect to said body structure upon deflection of said wheel relative to said body structure.

4,195,860

OFFSET ADAPTER

Paul A. Helams, Dallas, Tex., assignor to Austin Industries, Inc., Dallas, Tex.

Filed Dec. 5, 1977, Ser. No. 857,606
Int. Cl.[2] A01D *35/26;* B60D *1/14*
U.S. Cl. 280—460 A **6 Claims**



1. An offset adapter dimensioned to connect an implement having at least two hitching points in offset relation to the three point lift of a tractor, said adapter comprising:

a bar;

a first bracket depending from said bar, said bracket being adapted to be coupled to a first hitching point on the implement; and

a second bracket depending from said bar, said second bracket capable of being coupled to a second hitching point on the implement, said first and second brackets being positioned along the bar so that an implement attached thereto will be offset to one side of the center of the tractor;

a first mount depending from and affixed to said bar laterally of said first bracket in one direction;

a second mount depending from and affixed to said bar laterally of said first bracket in the opposite direction from said first mount; and

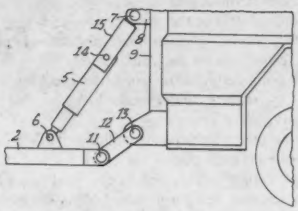
a support means upstanding from and affixed to said bar centrally of said first and second mounts, said mounts being adapted to be attached to the lower arms of the three point lift and the support means to the top arm of the three point lift, and said bar, brackets and mounts being adapted to be rotated in a plane parallel to the ground 180 degrees to permit attachment of the implement so that it is offset to the other side of the path of travel of the vehicle.

4,195,861

TRAILER WITH TOWBAR

Walter F. Philipponi, 41 Waterloo Crescent, Pineland, Pinetown, Natal, South Africa

Filed Dec. 15, 1977, Ser. No. 860,993
Int. Cl.[2] B60D *1/00*
U.S. Cl. 280—489 **1 Claim**



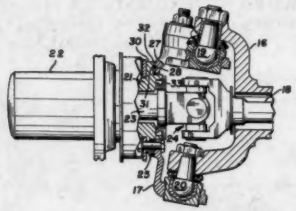
1. A trailer including a towbar having two members diverging from the hitch point to the trailer, each member being pivotally connected to the trailer for movement in a substantially vertical plane, and each member including damping means extending between the member and the trailer, each of the members and damping means being connected pivotally to an elongated extension element the other end of which is pivotally connected to the trailer.

4,195,862

CAMBER ADJUSTING SHIM ARRANGEMENT

Gerald A. Specktor, St. Paul, and John W. Solberg, Edina, both of Minn., assignors to Shim-A-Line, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 901,719, May 1, 1978, abandoned. This application Oct. 10, 1978, Ser. No. 950,171
Int. Cl.[2] B60K *17/30*
U.S. Cl. 280—661 **20 Claims**



1. In a steering drive axle assembly having an axle housing, a driving axle in said housing, a driven axle, a universal joint connecting said driving axle and said driven axle, a second housing surrounding said driven axle, a wheel hub member surrounding and rotatably secured to said second housing and secured to said driven axle to be rotated thereby, an intermediate annular member pivotally secured to said axle housing and detachably clamped to said second housing to pivotally connect said second housing to said axle housing, said second housing and said annular member having adjacent mating surfaces, and detachable means for clamping said mating surfaces together, and

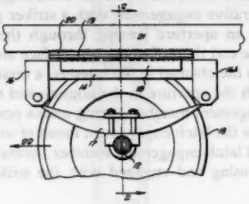
means for controlling the camber of the wheel secured on said hub member, said means comprising a resilient annular tapered shim disposed in mating relation between said mating surfaces and being formed of a non-metallic compressible plastic material of high impact strength and a compressive strength at yield within the range of 17,000 to 45,000 lbs. per square inch, such as is provided by nylon having a filler of glass beads.

4,195,863

VEHICLE SUSPENSION SYSTEM

George D. Richardson, Eastwood, Australia, assignor to Single Track Steer Pty. Limited, Mascot, Australia

Filed Apr. 20, 1978, Ser. No. 898,233
Int. Cl.[2] B60G *11/00*
U.S. Cl. 280—689 9 Claims



1. Mounting means for a vehicle wheel-unit which includes an axle having a longitudinal axis and two freely revolvable wheels longitudinally spaced at respective ends of the axle, the mounting means comprising:

(a) a rigid sub-frame,

(b) suspension means for connecting the wheel unit to the sub-frame,

(c) runway means for permitting the subframe to slide in a direction at right angles to the longitudinal axis of the axle, and stop means associated therewith so located as to define two spaced limit positions for the sliding movement of said subframe,

(d) a horizontal turn-table bed-plate having said runway means fixedly attached to its underside, and

(e) a horizontal turn-table top plate fixedly secured to the underside of the vehicle structure and resting on said bed-plate, said bed-plate being concentrically located and rotatable with respect to said top plate,

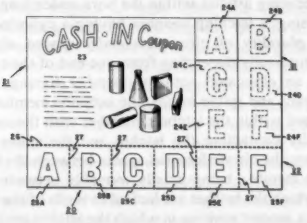
said runway means cooperating with the stop means such that when the vehicle travels in the forward direction, the sub-frame assumes one of the said limit positions in which the vertical plane that contains the longitudinal axis of the axle is spaced from and in trailing relationship to the common rotational vertical axis of the bed-plate and the top plate, and when the vehicle is traveling in the reverse direction, the sub-frame assumes the other of the limit positions in which the vertical plane is oppositely spaced from and in trailing relationship to the said vertical axis.

4,195,864

MULTI-PRODUCT COUPON

Robert S. Morton, and James R. Amrein, both of Westport, Conn., assignors to Promotional Marketing Corporation, Westport, Conn.

Filed Oct. 10, 1978, Ser. No. 949,946
Int. Cl.[2] B42D *15/00*
U.S. Cl. 283—56 8 Claims



1. A multiple retail product coupon freely redeemable at different retail stores and having a variable retail product purchase discount value selectively determined by the retail consumer comprising:

(A) a unitary base portion with no indicated value having a plurality of indicia-defined locations each designating a different type or number of retail consumer products; and

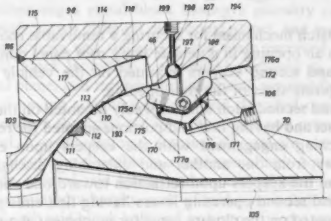
(B) a plurality of discount stamps, each bearing indicia defining one said different type or number of retail consumer products and a product discount redemption value, each fixedly mountable to the base portion at a designated indicia-defined location, the combination of the base portion and the fixedly mounted discount stamps creating a unitary retail store-redeemable multi-discount coupon having one of a plurality of retail redemption values determined solely by the consumer's selection from among the fixedly mounted discount stamps.

4,195,865

APPARATUS FOR CONNECTING TUBULAR MEMBERS

Charles F. Martin, P.O. Box 197, Porter, Tex. 77365

Filed Nov. 3, 1976, Ser. No. 738,609
Int. Cl.[2] F16L *27/06*
U.S. Cl. 285—18 33 Claims



1. An apparatus for connecting first and second tubular members comprising:

a female body having a passageway therethrough, said passageway defining first and second end openings, said female body having an internally formed engagement surface,

a male body having a passageway therethrough, said male body having an externally formed engagement surface, one end of said male body being adapted to be connected to one of said tubular members, the other end of said male body being received in said first end openings of said female body, said male body having an external, segmental spherical surface on the end received in said female body,

socket defining means having a passageway therethrough and providing a socket for receiving said segmental spherical surface of said male body, said socket defining means being adapted to be connected to the other of said tubular members and disposed in said female body,

means for preventing separation of said socket defining means and said female body when said male body is received in said socket while permitting relative, universal movement of said socket defining means and said male body and,

force imparting means disposed between said male and female bodies selectively operative to force said male body toward said socket, said force imparting means comprising toggle means, said toggle means including first and second toggle arms, each of said toggle arms having a free end, said toggle means being movable between a first position in which said first and second arms are at a first angle to one another to a second position in which said first and second arms are at a second, larger angle to one another, and the free end of said first arm is in engagement with said internally formed engagement surface in said female body and the free end of said second arm is in

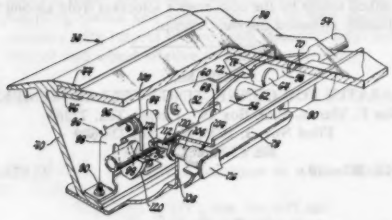
engagement with said externally formed engagement surface on said male body.

4,195,866

LOCK FOR REMOVABLE ROOF CLOSURE LATCH MECHANISM

Frank Tundo, Warren, and Edward A. Schneidewind, Detroit, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 16, 1978, Ser. No. 961,138
Int. Cl.[2] E05C 9/04
U.S. Cl. 292—127 **3 Claims**



1. A latch mechanism for securing a removable roof closure panel in an opening in a vehicle body roof panel comprising:

first and second keepers mounted on the vehicle body at opposite sides of the roof opening;

first and second latch bolts movably mounted on the closure panel and having first end portions adapted for respective latching engagement with the keepers upon extension away from one another and unlatching disengagement from the keepers upon retraction toward one another;

first and second operating levers having first ends pivotally mounted on the closure panel for movement about spaced axes and having second ends respectively pivotally connected with second end portions of the first and second latch bolts to extend and retract the latch bolts upon rotation of the operating levers;

means for rotating one of the levers;

intermeshing gear teeth provided on the first and second operating levers to simultaneously rotate the second lever with the first lever, the levers rotating oppositely of each other between a latching position wherein the levers are located generally colinear with each other and with the latch bolts to extend the latch bolts, and an unlatching position wherein the levers are located generally parallel to one another and normal to their respective latch bolts to retract the latch bolts;

a lock lever pivotally mounted on the closure panel generally adjacent the second end portion of one of the latch bolts for pivotal movement about an axis transverse to the axes of the operating levers and having a hook portion adapted to capture the one latch bolt in the position colinear with the associated operating lever and thereby prevent rotation of the operating levers to retract either of the latch bolts;

and occupant actuatable release means for pivoting the lock lever to release the one latch bolt whereby both operating levers may be rotated to retract both latch bolts.

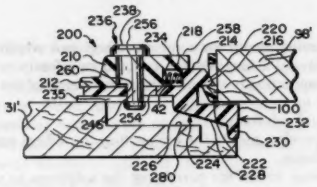
4,195,867

DOOR LATCH

William R. Baillie, 7082 Kinnikinnick, Roscoe, Ill. 61073

Filed Jun. 27, 1977, Ser. No. 810,359
Int. Cl.[2] E05C 1/10
U.S. Cl. 292—174 **11 Claims**

1. A door latch for latching a door to its associated jamb, the door having a channel therein opening to an edge surface thereof, said latch comprising, a housing of generally rectangular configuration with a top surface and an undersurface and being mountable on one surface of the door overlying said channel with the undersurface facing said one surface of the door, a channel formed in the undersurface along the elongate dimension of the housing, a latch engagement member having an opening formed therein and retained within the housing, cooperative means on said channel and said latch engagement member to permit slidable movement of the latch engagement member in the channel, means on the latch engagement member for cooperative engagement with a striker plate mounted on the jamb, an aperture passing through the housing and opening at one end thereof to the top surface and at the other end thereof to the channel in the housing, a retaining pin positioned through the aperture in the housing and the opening in the latch engagement member, spring means positioned in the housing to bias the latch engagement member so that at least a portion of said latch engagement member normally is disposed out of the housing and engaged with the striker plate, said



retaining pin having a flat surface thereon engaged against one wall of the opening in the latch engagement member to prevent the latch engagement member from leaving the housing, the latch engagement member including a lateral extension disposed within the door channel and terminating proximate the edge surface of the door so as to be substantially flush therewith, said extension being operable upon exertion of a force thereagainst to move the latch engagement member against the force of the spring means and thereby disengage the member from the striker plate to permit unlatching of the door, and including a generally square-shaped compartment formed in the housing beneath the top surface, said compartment opening to a front surface of the housing and to the channel in the housing, and an abutment wall formed in the compartment on a side thereof opposite the front surface of the housing, said spring means being located in said square-shaped compartment and acting against said abutment wall.

4,195,868

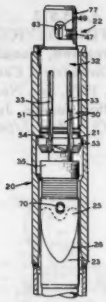
TUBULAR CLOSURE MECHANISM

David D. Kalen, Lynchburg, and Jerry W. Mitchem, Bedford, both of Va., assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Feb. 17, 1978, Ser. No. 878,960
Int. Cl.[2] E05C 19/06
U.S. Cl. 292—256.67 **7 Claims**

1. An apparatus for closing the bore of a tubular member and releasably securing articles within the bore under longitudinal load comprising: a latching member having a cylindrical section and a plurality of circumferentially spaced elongated latches longitudinally depending from one end of the cylindrical section; an elongated actuator member having integral camming means and spline means, the actuator member being partly disposed within the latching member with the camming means radially contacting the latches and the spline means projecting into the circumferential spaces between the latches, the actuator member being axially movable between a first position in which the latches are locked to walls of the tubular member and a second position in which the latches are secured from contact with the walls of the tubular member; means, operatively connected to the latching member, for axially

moving the actuator member such that said camming means actuates positioning of said latches; and means, operatively



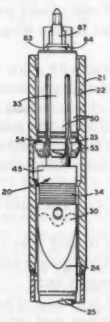
connected to the actuator member, for engaging the articles within the bore of the tubular member.

4,195,869

TUBULAR CLOSURE DEVICE

Francis C. Klahn, Madison Heights, Va.; John H. Nolan, Rochester, Mich., and Christopher Wills, Forest, Va., assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Feb. 17, 1978, Ser. No. 878,961
Int. Cl.[2] E05C *19/06*
U.S. Cl. 292—256.67 **5 Claims**



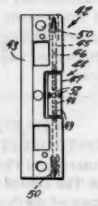
1. An apparatus for releasably securing articles under a longitudinal load within a bore of a tubular member and for closing the bore comprising: a latching member having a cylindrical section and a plurality of circumferentially spaced elongated latches longitudinally depending, in cantilevered fashion, from one end of the cylindrical section; an elongated actuator member slidably received within the latching member; the actuator member and latching member being axially movable with respect to each other; the actuator member having camming means contacting the latches for actuating radial movement of the latches, responsive to axial movement of the actuator member or the latching member, between a first position in which the latches engage the walls of the tubular member and a second position in which the latches are secured from contact with the walls of the tubular member; locking means, operatively connected to the actuator member, for releasably locking the actuator member and the latching member to prevent axial movements relative to each other and the tubular member; and means operatively connected to the actuator member for engaging the articles within the bore of the tubular member in response to axial movement of the actuator member.

4,195,870

SECURITY STRIKER PLATE

Jane Percoco, Hull, Mass., assignor to Jane Percoco, Hull, Mass.

Filed Aug. 21, 1978, Ser. No. 935,743
Int. Cl.[2] E05C *13/00*
U.S. Cl. 292—340 **1 Claim**



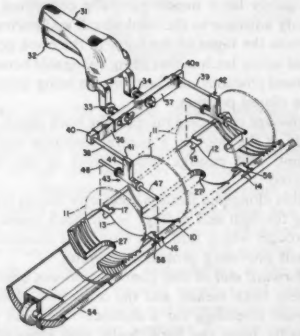
1. A security striker plate assembly, comprising, in combination, a striker plate and a support means whereby said striker plate is supported from a doorway frame and stand in a plurality of directional planes at right angles to each other; said means comprising a metal block having a plurality of holes therethrough in two different directional planes, and mounting directional screws and studs of a stud plate received in said holes; said block including a turnbuckle secured in a third directional plane, said turnbuckle comprising a manually rotatable barrel having a right- and left-hand threaded opening at opposite ends, a threaded pin in each of said end openings of said barrel, a cross-sectional substantially square portion of each said pins being slideable in a correspondingly square hole at opposite ends of said block, and an end of each said pins being spur pointed whereby each of said pins is slideable outwardly of each said block hole end and into adjacent upper and lower portions of said doorway frame.

4,195,871

DIFFUSION BOAT AND GRIP

George E. Chilton, Haworth, and John Kudla, Colonia, both of N.J., assignors to Codi Corporation, Fair Lawn, N.J.

Filed Jun. 12, 1978, Ser. No. 914,972
Int. Cl.[2] B65D *25/28*
U.S. Cl. 294—16 **18 Claims**



1. A tool for gripping an elongated transport device having a concave surface extending from end to end and grooved repeatedly to support peripherally each of a plurality of disc-like semiconductor elements, each end of the device having a pair of spaced apart notches aligned linearly perpendicular to a radial bisector of said surface, the tool comprising a pair of spaced apart parallel extending arm members operably inter-

connected to be movable back and forth toward and away from each other to respective actuated and unactuated positions, the movement of said arm members being substantially linear as they approach said actuated position, a pair of oppositely extending and linearly aligned finger sections carried by each of said arm members, each of said finger sections being adapted to be inserted into one of the notches, means for moving the arm members laterally toward each other thereby to insert said fingers simultaneously into the notches to grip the transport device, and stop means interrupting movement of said arm members for establishing the distance between said arm members at predetermined values for each of said actuated and unactuated positions.

4,195,872

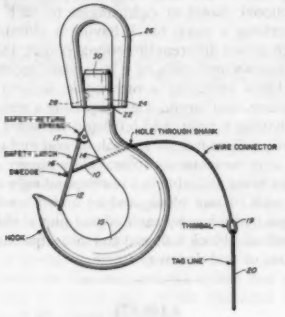
REMOTE CONTROLLED SAFETY HOOK

Clifford I. Skaalen, Oxnard, and Philip M. Kling, Ventura, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 27, 1978, Ser. No. 955,434

Int. Cl.[2] B66C 1/36

U.S. Cl. 294—82 R **6 Claims**



1. A remote controlled safety hook used for lifting loads, particularly for use with cranes and hoists mounted on floating platforms, comprising:

a. a hook body having a hook shank and a hook point; said hook shank being mounted in a swivel which enables the hook to be rotated about a vertical axis;

b. a safety latch means pivotally connected to said hook body adjacent to the hook shank and normally extending across the bight of the hook to the hook point;

c. said safety latch means being swingable between open and closed positions; said latch means being normally biased to the closed position;

d. a passage extending through the hook shank, from the rear side of the hook in a general direction toward the hook point; said passage being larger at the rearward end thereof;

e. a thin elongated flexible connector means slidably extending through said passage in the hook shank; said passage through which said thin elongated connector means extends providing protection thereto;

f. a forward end of said connector means connected to said safety latch means, and the other end of said connector means extending for a distance from said passage rearwardly from the hook body; said elongated connector means operable to be manipulated by being pulled in a direction away from the rearward side of said hook body;

g. the forward end of said elongated connector means being swively connected to said latch means;

h. tag line means connected to the other end of said elongated connector means for both remote manipulation of said safety latch means by an operator at a remote location and for ready positioning of said hook to connect and disconnect with a load.

4,195,873

LIFTING DEVICE

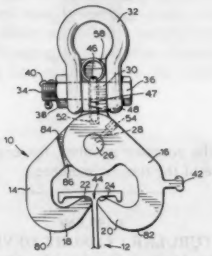
Ronald J. Johnston, Georgetown, Canada, assignor to Aluma Systems Incorporated, Downsview, Canada

Filed Jul. 27, 1978, Ser. No. 928,409

Claims priority, application Canada, Jul. 21, 1978, 307870

Int. Cl.[2] B66C 1/64

U.S. Cl. 294—106 **5 Claims**



1. A lifting device for use in association with concrete forming structures, comprising:

(a) a pair of jaws, each have an inwardly turned hook-like configuration;

(b) an axle on which each of said pair of jaws is mounted and to which one end of one of said pair of jaws is secured so that said pair of jaws have a hinged relationship to each other;

(c) a lifting lug associated with a first one of said pair of jaws;

(d) a handle associated with the second of said pair of jaws;

said lifting device being characterized in that:

(i) said inwardly turned hook-like configurations of said jaws have rounded tips at the inner end of each said jaw, which tips are proximal to each other when said jaws are in their closed positions;

(ii) said tips are below said axle, and said lifting lug is above said axle;

(iii) the length of each of said jaws is substantially equal to each other, so that said tips are substantially co-extensive along their entire lengths and

(iv) the lengths of said jaws and of said axle are all substantially equal to each other, and are all substantially greater than the diameter of said axle.

4,195,874

VEHICLE REAR WINDOW ARRANGEMENT

Lutz Janssen, Wolfsburg; Klaus-Rainer Deutenbach, Gifhorn-Kästorf; Hans-Jochen Lückoff, Wolfsburg, and Karl Warnecke, Ehmen, all of Fed. Rep. of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Filed Jul. 21, 1978, Ser. No. 926,855

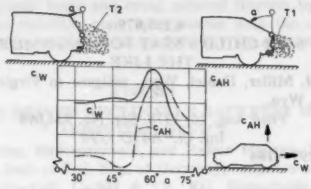
Claims priority, application Fed. Rep. of Germany, Aug. 20, 1977, 2737638

Int. Cl.[2] B60J 1/20

U.S. Cl. 296—1 S **6 Claims**

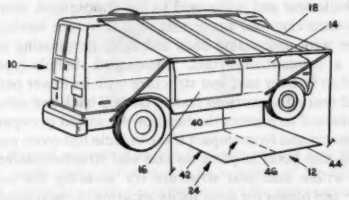
1. A rear window arrangement for a fastback vehicle comprising a first rear window portion having a first angle with respect to the vertical, said first angle being selected to ensure a smooth laminar flow of air along the first window portion and a drag coefficient no greater than that of a square back vehicle, and a second rear window portion, behind and below the first window portion and having a second and smaller angle with respect to the vertical, said first and second window

portions meeting at a rearward pointing outside corner, and a rear spoiler along said corner, said spoiler having an upper



deflection surface having an angle of at least 90° from the vertical.

4,195,875
PORTABLE ENTRANCEWAY CARPET FOR A RECREATIONAL VEHICLE
Phillip L. Venne, 725 N. Dangle Rd., Muskegon, Mich. 49442
Filed May 15, 1978, Ser. No. 906,123
Int. Cl.² B60J *11/00*
U.S. Cl. 296—1 F **5 Claims**



1. A portable entranceway carpet for a recreational vehicle comprising:

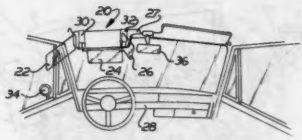
a section of carpet of a size sufficient for use as a walking surface on the ground at the doorway of a recreational vehicle, the carpet having a non-smooth surface texture such that the carpet serves as a means for removing dirt from shoes by scuffing the shoes on the carpet, the carpet further being formed of a material that is thick and durable enough to serve for repeated use as a walking surface;

a hollow elongated container having an interior of sufficient size to house the carpet after it has been rolled up; the container being adapted to be mounted under a door sill at the side of the recreational vehicle and including a roller rotatably mounted in the container that supports the rolled up carpet in the container, an inner end of the carpet being attached to the roller such that rotation of the roller causes the carpet to be rolled on or off the roller, the container having opening means for removing the carpet from the container and replacing the carpet in the container, the container further including means for rotating the roller to retract the carpet into the container when desired; and

mounting means for attaching the container to the exterior of the recreational vehicle under the door sill.

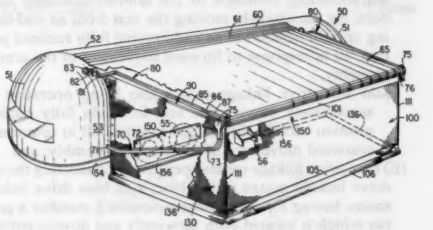
4,195,876
GLARE SHIELD ASSEMBLY
Henry Timperio, Mayfield Heights, Ohio
Filed Jul. 19, 1978, Ser. No. 925,945
Int. Cl.² B60J *3/02*
U.S. Cl. 296—97 G **14 Claims**

6. A glare shield assembly for attachment to the visor of an automobile, said glare shield assembly comprising a shield means formed of semi-transparent plastic for reducing the glare of sunlight or headlights, and clip means for connecting said glare shield assembly with the visor, said clip means including first and second opposed hooks each having a straight body portion and a curved end portion adapted to engage a major edge of the visor, a continuous flat elastic strap for drawing said hooks into clamping relation with opposite top and bottom edges of the visor, and adjustment means for enabling said clip means to be drawn into clamping relation with the opposite major edges of the visor regardless of the distance between the edges, said adjustment means comprising slot



means in said body portion of said first hook for engaging said elastic strap and a plurality of slot means in said body portion of said second hook for selectively engaging said strap, each of said plurality of slot means being spaced a different distance from said curved end portion of said second hook, said strap being engageable by any one of said plurality of slot means to adjust the distance between said curved end portions of said hooks.

4,195,877
EXTERIOR ROOM FOR A TRAILER
Henry J. Duda, 3357 N. Newland Ave., Chicago, Ill. 60634
Filed Aug. 14, 1978, Ser. No. 933,281
Int. Cl.² B60P *3/34*
U.S. Cl. 296—172 **8 Claims**



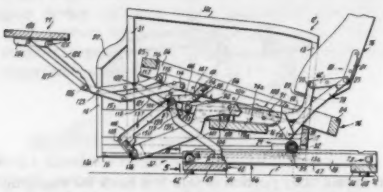
1. An outside room for a travel trailer comprising frame means constructed and arranged to be connected to one side of the travel trailer and to extend outwardly, therefrom, said frame means having two members extending substantially perpendicularly to the longitudinal axis of the trailer interconnected by a member parallel to the longitudinal axis of the trailer, a roof covering said members and connected to the trailer, a front panel mounted on said parallel member having sufficient length to extend from said member to the ground, means for maintaining said parallel member and said front panel in tension including a cable and threaded members bearing against said perpendicular members for maintaining said cable under tension, two side panels each respectively mounted on one of said perpendicular members and each having sufficient length to extend from said respective member to the ground, means connecting one edge of each side panel to the trailer and the edge parallel thereto the the adjacent edge of said panel, and watertight containers connected to said side panels and said front panel near the bottoms thereof.

4,195,878

RECLINING CHAIR

Izchak Cycowicz, Brooklyn, N.Y., and Robert J. Caldwell, Bloomfield, N.J., assignors to Mohasco Corporation, Amsterdam, N.Y.

Filed Oct. 25, 1977, Ser. No. 845,065
Int. Cl.[2] A47C 1/02
U.S. Cl. 297—83 **41 Claims**



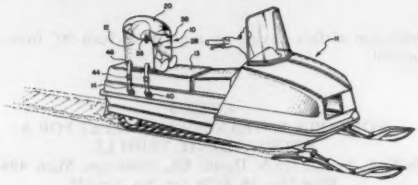
1. In a wall-clearing reclining chair of the type comprising
(A) a base for supporting the chair on the floor;
(B) a seat located generally above the base and having a pair of seat-mounting members each located at an opposite side of the seat;
(C) a movable armrest assembly mounted for longitudinal horizontal reciprocating movement relative to the base, said armrest assembly including
(1) a pair of armrests each located at an opposite side of the seat,
(2) means for interconnecting the armrests including a pair of armrest-mounting members mounted on each armrest at a predetermined location below the seat, and
(3) a pair of movable tracks each mounted for said reciprocating movement relative to the base, said interconnected armrests being mounted on the movable tracks to move forwardly and rearwardly together with the latter as a unit;
(D) seat drive linkage means operatively connecting the seat-mounting members to the armrest-mounting members, for successively moving the seat from an end-limiting upright position to an end-limiting fully reclined position, all in response to forward movement of the armrest assembly,
said seat drive linkage means also being operative for successively moving the seat from the fully reclined position back to the upright position, all in response to rearward movement of the armrest assembly; and
(E) base drive linkage means operatively connecting the seat drive linkage means to the base, said base drive linkage means having for each armrest-mounting member a pivot pin which is located both forwardly and downwardly of the respective predetermined location of the associated armrestmounting member;
the improvement comprising:
extension means for transmitting the force generated at each armrest-mounting member during said reciprocating movement of the armrest assembly directly to its associated pivot pin,
said extension means including a pair of forcetransmitting elongated extension members, each having one end region at a respective armrest-mounting member, an opposite end region at the respective pivot pin, and an intermediate extension portion which extends from said one end region downwardly and forwardly of the associated predetermined location of the respective armrest-mounting member to said opposite end region,
each extension member being made of forcetransmitting rigid material for transmitting the forwardlyand rearwardly-directed forces generated during said reciprocating movement of the armrest assembly at the armrest-mounting members thereof directly to their respective pivot pins, whereby each pivot pin is reliably reciprocably guided along a longitudinal horizontal path relative to the base.

4,195,879

INFANT'S OR CHILD'S SEAT FOR SNOWMOBILES OR THE LIKE

Stephen J. Miller, Daniel, Wyo., assignor to Virginia Miller, Daniel, Wyo.

Filed Aug. 16, 1978, Ser. No. 934,098
Int. Cl.[2] A47D 1/10
U.S. Cl. 297—184 **8 Claims**



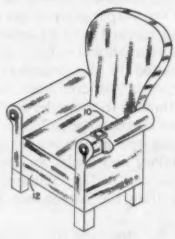
1. An infant's or small child's seat for use upon a vehicle in which the driver normally sits astride a longitudinally extending vehicle seat and is exposed to the atmosphere, comprising a body-receiving and protecting seat structure having a seat member with upstanding back and sides terminating in upper edges; a substantially rigid, transparent, bubble-type hood adapted to fit over said seat structure with its lower peripheral side and rear edge portions resting on said back and sides upper edges thereof to protect the head of the seated occupant from the elements and from impact if the vehicle tips over; means for securing said hood in place on said seat structure; safety strap means within said seat structure for securing the occupant therein; and means for detachably securing the seat structure in superimposed position on a portion of the longitudinally extending seat of the vehicle.

4,195,880

ARM CHAIR COASTER

Oscar E. Henkhaus, 1305 4th St., Lake Charles, La. 70601

Filed Oct. 19, 1978, Ser. No. 952,915
Int. Cl.[2] A47C 7/42
U.S. Cl. 297—194 **9 Claims**



1. Improved arm chair coaster apparatus comprising an elongated closed container consisting of a main plastic body having a peripherally disposed seam sewn inwardly along an edge forming a margin thereof, said main plastic body having a narrow dimensioned intermediate section and bulbuous end sections at each end of each said bulbuous end sections containing a quantity of weighted elements, said seam being demarking means to define an upper side and a lower side of said main plastic body, said under side having a non-slip, sprayed foam rubber coating thereon throughout it's entire under surface for providing contact with an arm of arm chairs or sofas, block means having a cylindrically contoured, concave surface seg-

ment on one side of the block means and a generally flat surface on the other side thereof forming a support surface, said concave surface segment receiving said intermediate section of said main plastic body and being secured thereon by a thin vinyl plastic stabilizer plate coterminous with the concave surface segment and being secured thereon by rivet means.

4,195,881

MOTOR DRIVEN RECLINABLE BACKREST WITH ARRESTING DEVICE

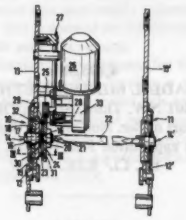
Bernd Klüting, Radevormwald, and Rainer Holweg, Wermelskirchen, both of Fed. Rep. of Germany, assignors to Keiper Automobiltechnik GmbH & Co. KG, Remscheidt-Hasten, Fed. Rep. of Germany

Filed Mar. 2, 1979, Ser. No. 17,161

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1978, 2808954

Int. Cl.[2] B60R *21/10*; A47C *1/025*

U.S. Cl. 297—216 **6 Claims**



1. In a hinged mounting means for seats having a reclinable backrest, particularly for motor vehicle seats, of the type including a stationary mount part secured to the seat portion and an adjustable mount part secured to the backrest, a pivot axle for connecting both mount parts, and a position-adjusting and arresting device arranged at least at one side of the seat between said mount parts and driven by a motor having a driving pinion, a combination comprising a setting shaft coupled to said pivot axle, an intermediate gear supported for free rotation on said shaft and being in mesh with said driving pinion, a coupling wheel supported for joint rotation and for axial movement on said shaft, an arresting ring secured to one of said mount parts around said shaft, and means for axially urging said coupling wheel into a driving position in which it is coupled to said intermediate gear and alternatively, into an arresting position in which it is coupled to said arresting ring.

4,195,882

ADJUSTABLE CONVERTIBLE FURNITURE FOR SUPPORTING ONE OR MORE PERSONS

Alexander C. Daswick, 647 Orange Grove, Apt. 209, South Pasadena, Calif. 91030, and Archie C. Landry, Canoga Park, Calif., assignors to Alexander C. Daswick, South Pasadena, Calif.

Continuation-in-part of Ser. No. 826,033, Aug. 19, 1977, abandoned. This application Oct. 2, 1978, Ser. No. 947,359

Int. Cl.[2] A47C *17/00*

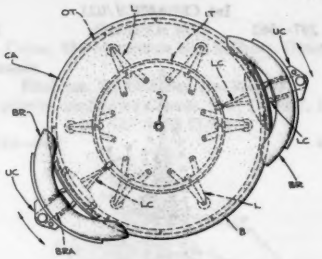
U.S. Cl. 297—242 **26 Claims**

1. An adjustable article of furniture usable by at least two people concurrently as a lounge chair, couch, bed or the like, comprising:

a unitary main frame having means thereon forming a cushioned horizontal surface;

a plurality of movable backrests positioned along the border of said cushioned horizontal surface, each of said backrests including a vertical support member, means supporting the lower portion of said vertical supporting member from said main frame, and a horizontal backrest member secured to the upper portion of said vertical supporting member at a level above the elevation of said cushioned horizontal surface, the space above said cushioned horizontal surface being otherwise unobstructed;

each said vertical support member and its associated supporting means cooperating with said main frame to permit horizontal displacement of the corresponding backrest along a path substantially parallel to the border of said cushioned horizontal surface;



each of said backrests being independently movable along the border of said cushioned horizontal surface; and

each of said backrests having means for adjusting the angular relationship of its horizontal backrest member to said cushioned horizontal surface independently of the other backrests.

4,195,883

ARRANGEMENT FOR DAMPING OSCILLATING MOVEMENTS IN VEHICLE SEATS

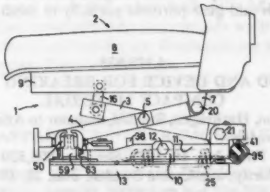
John F. Rönnhult; Bjarne L. Petersen, and Staffan S. Sjöström, all of Södertälje, Sweden, assignors to Saab-Scania Aktiebolag, Södertälje, Sweden

Filed Jan. 23, 1978, Ser. No. 871,619

Claims priority, application Sweden, Jan. 24, 1977, 7700689

Int. Cl.[2] A47C *3/00*

U.S. Cl. 297—302 **5 Claims**



1. Apparatus for damping oscillating movements in vehicle seats comprising essentially a seat portion, a back support portion, a seat frame and a base frame, the seat frame being located between at least the seat portion and the base frame and comprising an arm assembly for supporting the seat portion and for allowing the seat portion to be positioned at different levels relative to the base frame depending on the load, said assembly including arms having lower ends pivotably supported in a support frame that constitutes the lower part of the seat frame and having upper ends connected to the seat portion, said assembly further including adjustable spring means cooperating with one of said arms for biasing said arms toward a seat supporting position, means for connecting the base frame to a vehicle floor, means pivotably supporting the support frame to the base frame so that the seat frame, the seat portion and the back support portion can oscillate about an essentially transverse axis, and at least one damping element cooperating with the support frame and with the base frame for damping such oscillations.

4,195,884

HINGE FOR A RECLINABLE BACK OF A MOTOR VEHICLE SEAT

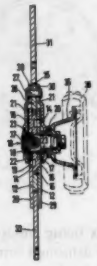
Dieter Muhr, and Heinz P. Cremer, both of Remscheid, Fed. Rep. of Germany, assignors to Keiper Automobiltechnik GmbH & Co. KG, Remscheid, Fed. Rep. of Germany

Filed May 30, 1978, Ser. No. 910,502

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1977, 2724637

Int. Cl.[2] A47C *1/025*

U.S. Cl. 297—362 16 Claims



1. A hinge for use in a seat, particularly in a motor vehicle seat, for mounting a back component on a seat component of the seat for angular adjustment relative thereto, comprising, in combination, a rotatable pivot element having a first cylindrical zone centered on a pivot axis and a second cylindrical zone centered on an eccentric axis parallel to and offset from said pivot axis; a first hinge element mounted on one of said zones and having a first gear portion and a first symmetrically bifurcated portion which is rigid with and partially embraces said first gear portion; a second hinge element mounted on the other of said zones and including a second gear portion meshing with said first gear portion, and a second symmetrically bifurcated portion which is rigid with said second gear portion and partially embraces the same and said first bifurcated portion; and means for turning said pivot element about said pivot axis to thereby displace said hinge elements relative to one another with said gear portions partially in mesh.

4,195,885

METHOD AND DEVICE FOR BREAKING A HARD COMPACT MATERIAL

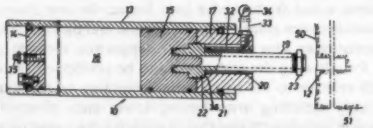
Erik V. Lavon, Haröväagen, Sweden, assignor to Atlas Copco AB, Nacka, Sweden

Filed Jun. 10, 1977, Ser. No. 805,520

Claims priority, application Sweden, Jun. 28, 1976, 7607337

Int. Cl.[2] E21C *25/60*

U.S. Cl. 299—1 39 Claims



1. A method of breaking hard compact material, such as rock by means of relatively incompressible fluid, such as water, which as an elongated fluid mass body (11) is directed toward the material to be broken, comprising:

storing a mass of said fluid in a storage chamber (18),

exerting a substantially continuous thrust load upon the fluid in said storage chamber (18),

successively supplying said fluid to said storage chamber (18) against the effect of said thrust load,

providing a barrel (19) coupled to said storage chamber for forming fluid received from said storage chamber into an elongated coherent mass body (11) and for directing the fluid mass body (11) toward the material to be broken, and

suddenly opening a passage between said storage chamber and said barrel, responsive to a predetermined amount of the fluid being supplied to said storage chamber (18), to permit said fluid in said storage chamber (18) to be expelled through said barrel as said elongate mass body and toward the material to be broken by the effect of said thrust load exerted on said fluid, the maximum pressure in said storage chamber during said expelling of fluid from said storage chamber being substantially the same as the maximum pressure during the supplying of fluid to said storage chamber.

4,195,886

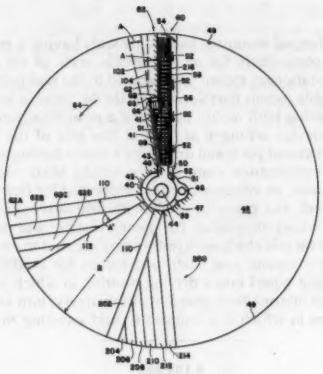
RADIAL MINING METHOD

Henry L. Roye, 801 NW. Third, Stigler, Okla. 74462

Continuation-in-part of Ser. No. 761,797, Jan. 24, 1977, Pat. No. 4,072,351. This application Feb. 6, 1978, Ser. No. 875,298

Int. Cl.[2] E21C *41/00*

U.S. Cl. 299—11 20 Claims



1. The method of mining a selected area of a subterranean mineral seam, comprising;

(a) preparing a workroom or station at a selected point in said subterranean mineral seam;

(b) drilling a shaft in said seam, in a selected direction from said workroom or station;

(c) as material is removed from said shaft, supporting the roof by means of movable roof supports, or chocks, said supports arrayed in spaced relation along said shaft and oriented in the selected first dimension, in which said shaft is to be enlarged;

(d) as the roof supports are placed in position, providing a continuous curtain closure wall, or air seal, behind said roof supports;

(e) providing a supply of clean air to said work station and causing it to flow along said shaft under said roof supports, around said curtain closure wall, and back of said closure wall to said work station; and

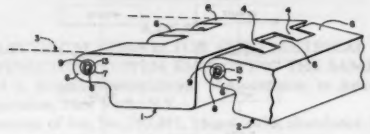
(f) providing means for disposing of the contaminated air returned to said work station.

4,195,887

ELASTOMERIC BUSHINGS

Adrian Ruddell, Los Gatos, Calif., assignor to Burke Industries, Inc., San Jose, Calif.

Filed Nov. 22, 1978, Ser. No. 963,090
Int. Cl.[2] B62D 55/26
U.S. Cl. 305—42 5 Claims



1. In an endless track for vehicles including track links formed with cross bores, articulately connected by track pins, the improvement comprising:

a. a non-elastic pin sleeve having an elliptical cross sectional shape with a major axis removably mounted on said pin so that said major axis is normal to the direction of maximum force exerted on said sleeve; and

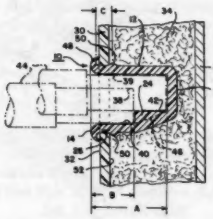
b. an elastomeric bushing dimensioned for force fit mounting within said cross bores and having a molded elliptical cross sectional shape with a major axis and bonded to said sleeve so that said major axis is positioned parallel to the direction of maximum compressive force exerted on said bushing wherein there is a greater thickness of elastomer to resist said maximum force.

4,195,888

MOUNTING SOCKET

Herbert D. Squire, Galesburg, Ill., assignor to Magic Chef, Inc., Cleveland, Tenn.

Filed Jul. 13, 1978, Ser. No. 924,150
Int. Cl.[2] F25D 11/00; A47G 29/00
U.S. Cl. 312—214 8 Claims



1. A mounting socket installed within a refrigerator or the like which has an inner liner including a thin wall, an outer cabinet with an insulation space therebetween, said socket being capable of receiving a horizontally extending mounting device associated with an internal shelf or the like, said socket comprising:

a body having an opened first end, a closed second end and an intermediate section therebetween, said body having an internal cavity extending along its axis from said first end to said second end;

said cavity having a horizontally oriented upper portion and a horizontally oriented lower portion thereof when said intermediate section of said body is positioned within a hole in a vertical region of said inner liner with said second end located within said insulation space;

said upper portion of said cavity being capable of receiving said horizontally extending mounting bracket therein;

said lower portion of said cavity being capable of receiving said horizontally extending mounting bracket therein;

said upper portion of said cavity having a first depth from said first end which is greater than a second depth in said lower portion as measured from said first end to allow greater insertion of said horizontally extending mounting bracket in said upper portion than in said lower portion of said cavity; and

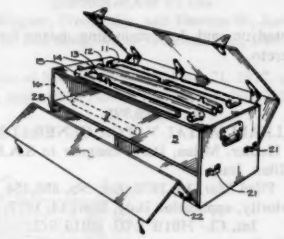
said lower portion of said cavity providing a final resting position for said mounting device allowing normal positioning of said shelf in said refrigerator.

4,195,889

CAMPER BOX

Robert P. Coyne, 854 Martindale Rd., Sudbury, Ontario P3E 4H8, Canada

Filed Jan. 31, 1978, Ser. No. 859,093
Claims priority, application Canada, Nov. 17, 1977, 291102
Int. Cl.[2] A47B 85/00
U.S. Cl. 312—240 4 Claims



1. A compact, portable, compartmented box-table combination which provides storage space for equipment necessary for the preparation and serving of meals, comprising an open-sided box having a top panel and a bottom panel held in spaced substantially parallel relationship by two end members, a rigifying narrow side panel fixedly mounted adjacent said bottom panel, two pairs of interhinged leaves, the first pair hingedly attached at one side of the box to the top edge of said rigifying narrow side panel and the second pair of interhinged leaves hingedly attached at the opposite side of the box to the edge of said bottom panel such that when both pairs of interhinged leaves are folded upwardly they serve as side walls for the box and also provide an enclosed space above said top panel for the storage of support frame components.

4,195,890

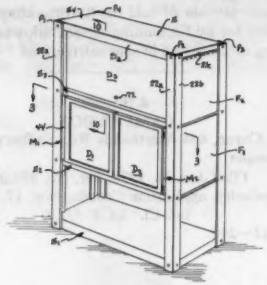
SHELF APPARATUS WITH REMOVABLE DOOR ASSEMBLY

Harlan F. Kellogg, 1617 Sprucewood, Rockford, Ill. 61107

Filed Aug. 24, 1978, Ser. No. 936,339
Int. Cl.[2] A47B 43/00
U.S. Cl. 312—257 R 16 Claims

1. In a shelf apparatus including an upper shelf and a lower shelf each having depending front and rear flanges and depending end flanges extending between the front and rear flanges, upright shelf support means at each end of the shelves each including end leg means overlapping the end flanges on a respective end of the shelves and front and rear leg means respectively overlapping the front and rear flanges on the shelves adjacent the ends thereof, and means rigidly securing the shelf support means to the shelves to support the same in fixed vertically spaced relation, a removable door assembly including upright door mounting means removably positioned between the upper and lower shelves and having a portion extending alongside the inner side of the front leg of one of the shelf support means and having upper and lower shelf engaging abutment means respectively adapted to engage the depending front flange on the upper shelf and the upper surfce of the lower shelf, manually operable means for adjustably and forcibly increasing the spacing between the upper and lower

shelf engaging abutment means to jam the door mounting means vertically between the upper and lower shelves, and a



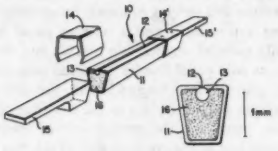
door mounted on said door mounting means for movement relative thereto.

4,195,891

ALKALI METAL VAPOR GENERATOR

Stephen J. Hellier, Milan, Italy, assignor to S.A.E.S. Getters S.p.A., Milan, Italy

Filed Mar. 10, 1978, Ser. No. 885,454
Claims priority, application Italy, Mar. 14, 1977, 21182 A/77
Int. Cl.[2] H01B *1/02*; H01J *9/22*
U.S. Cl. 316—5 **10 Claims**



1. An alkali metal vapour generator comprising a holder and a material carried by the holder, said material being of the formula AM_x, wherein A is selected from the group consisting of sodium, potassium and caesium, M is selected from the group consisting of boron and silicon, and x is from 1 to 40.

4,195,892

BATCH PRODUCTION OF PLASMA DISPLAY PANELS

Timothy J. Riley, Lake Hill; Nicholas Vecchiarelli, Marlboro, and Richard A. Fritz, Red Hook, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 1, 1978, Ser. No. 911,592
Int. Cl.[2] H01J *9/385, 9/395*
U.S. Cl. 316—20 **10 Claims**

1. A process for the batch fabrication of plasma display panels, said process including the steps of:

preparing a master plate having a size encompassing the areas of a plurality of panel plates,

forming a conductor array on each of said panel plate areas,

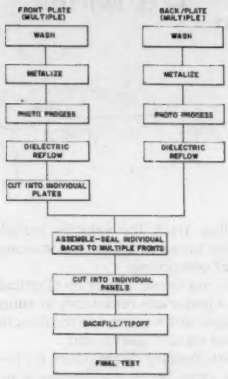
overcoating each of said conductor arrays with a dielectric layer,

preparing a second plurality of individual panel plates with conductor arrays substantially orthogonal to those on said panel plate areas,

positioning said individual panel plates on nondefective ones of said panel plate areas to form a plurality of panel assemblies mounted on a common master plate,

sealing said panel assemblies simultaneously including maintaining a uniform discharge gap in each of said panel assemblies,

cutting said master plate into a plurality of individual panels adapted for interconnection to a drive signal source, and



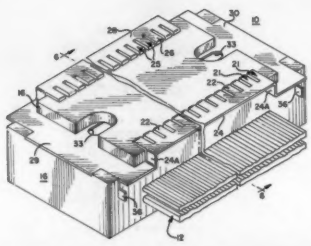
backfilling each of said panels with an ionizable gas at a predetermined pressure.

4,195,893

FLAT RIBBON CABLE MASS TERMINATION CONNECTOR ASSEMBLY

Lawrence J. Stupay, Endwell, N.Y., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Aug. 2, 1978, Ser. No. 930,484
Int. Cl.[2] H01R *3/06*
U.S. Cl. 339—14 R **17 Claims**



1. An electrical connector assembly for terminating a ribbon cable having a group of electrical conductors disposed in parallel side by side relationship within a common sheath of insulation material, a first plurality of said conductors being active signal conductors and the remaining plurality being grounded shield conductors, said connector assembly comprising:

a group of spaced contact termination tabs electrically connected respectively to a corresponding plurality of signal conductors of said cable, each said contact termination tab being L-shaped in configuration with one leg portion of said tab being disposed substantially perpendicular to said ribbon cable and in electrical connection with a signal conductor thereof;

a common ground member electrically connected to the remaining plurality of said shield conductors;

said common ground member being spaced from said termination tabs; and

a one piece molded dielectric housing means for encapsulating said common ground member leaving only a portion

thereof exposed and encapsulating a portion of each said contact termination tabs including the electrical connections between said tabs and said signal conductors and encapsulating at least a portion of the ribbon cable including said common sheath of insulation material, to thereby provide an integral connector terminating said ribbon cable.

4,195,894

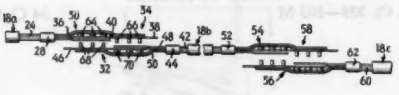
ELECTRICAL CONNECTOR AND ELECTRICAL CONNECTION SYSTEM EMPLOYING THE SAME

Edward J. Kotski, Hackettstown, N.J., assignor to Amerace Corporation, New York, N.Y.

Continuation of Ser. No. 793,481, May 4, 1977, abandoned. This application Jun. 9, 1978, Ser. No. 914,081

Int. Cl.[2] H01R *35/00*; H02G *11/02*

U.S. Cl. 339—14 R **25 Claims**



1. In combination: an electrical cable and mobile means for mining connected to said cable and electrically powered thereby, said mobile means having reeling means for take-up and pay-out of said cable, said cable being comprised of plural cable sections and including an elongate connector assembly for releasably electrically interconnecting said cable sections, said connector assembly including joined first and second connector elements separable from one another by relative movement thereof transversely of the longitudinal axis of said connector assembly, said first and second connector elements having respective contact support members with contacts having joinder directions extending transverse to such connector assembly longitudinal axis, each such contact support member having flexure capability enabling, in the course of such reeling, convex and concave bending disposition of said connector assembly along said longitudinal axis and hence circular disposition thereof with such plural cable sections connected thereby.

4,195,895

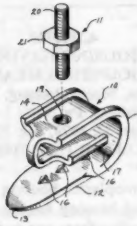
CABLE BONDING CLAMP

Hans J. Ziegler, Milwaukee, Wis., assignor to Reliable Electric Company, Franklin Park, Ill.

Filed Feb. 1, 1979, Ser. No. 8,423

Int. Cl.[2] H01R *3/06*

U.S. Cl. 339—14 R **11 Claims**



1. A cable bonding clamp for making an electrical connection with the inner conductive shield of an insulated communication cable includes:

(a) a generally C-shaped clamp body having:

(1) a first contact arm for insertion beneath the insulation of the cable and into contact with the conducting shield, and

(2) a second arm attached to the first by a bridge, said second arm extending substantially parallel to and in the same direction as the first arm,

(b) a compression arm hingedly connected to the end of the second arm, said compression arm extending in the opposite direction of the first and second arms and being positioned between said arms, and

(c) means for moving the compression arm toward the contact arm so that when the contact arm is in contact with the conductive shield of the cable the portion of the cable external to the conductive shield can be clamped between the compression arm and the contact arm to secure the cable bonding clamp to the cable.

4,195,896

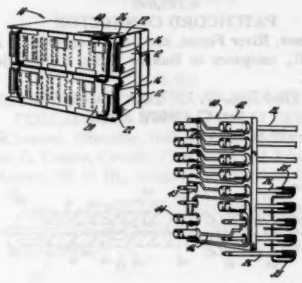
PROGRAM PLUG

George G. Wagner, Woodridge, and Thomas W. Jordan, Berkeley, both of Ill., assignors to Wescom, Inc., Downers Grove, Ill.

Continuation of Ser. No. 853,810, Nov. 21, 1977, abandoned. This application Nov. 29, 1978, Ser. No. 964,660

Int. Cl.[2] H05K *1/12*

U.S. Cl. 339—18 B **2 Claims**



1. In a circuit card shelf, which shelf has a plurality of shelf connectors each having an array of binding posts extending therefrom in a common space pattern with the arrays having common units of spacing therebetween, the combination comprising a program plug non-permanently interconnecting the array of binding posts comprising:

a. circuit board,

b. a plurality of arrays of conductive sockets of spring material affixed to the circuit board, each socket array spaced to match the common space pattern array of binding said sockets thereby being pressed onto the binding posts of a plurality of shelf connectors and slidably and resiliently engaging the binding posts, and

c. printed circuitry on the circuit board electrically interconnecting predetermined ones of the sockets and thereby establishing a desired pattern of interconnections between the array of binding posts.

4,195,897

COLLISION ACTIVATED, AUTOMATIC ELECTRICITY DISCONNECTOR FOR VEHICLES

John G. Plevjak, 34 Hay Rd., St. George Ter., Shirley, N.Y. 11967

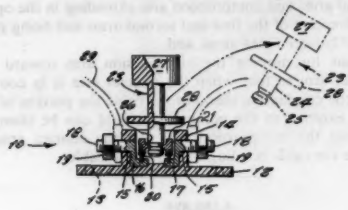
Filed Oct. 30, 1978, Ser. No. 956,208

Int. Cl.[2] H01R *13/02*

U.S. Cl. 339—45 R **1 Claim**

1. A collision activated, automatic electric disconnect device for vehicles, comprising in combination, a base integral with a collar made of insulated material, means for mounting said base stationarily on said vehicle, means for connecting said discon-

nect device in the battery circuit of said vehicle and connectable means for connecting a weighted contact to said disconnect device such that a collision of said vehicle will cause said weighted contact to be disconnected from said disconnect device, thereby interrupting said battery circuit, wherein said



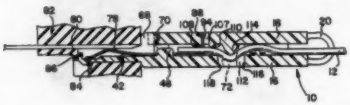
connection means comprises a semi-circular resilient clamp around a central opening, and a weighted conductor snap fitted in said central opening, wherein said conductor comprises a conductive pin having an enlarged weight at its upper end and fulcrum means at its intermediate portion, a lower end of said pin having means to snap fit in said clamps.

4,195,898

PATCHCORD CONNECTOR

Weichien Chow, River Forest, and Josef Keglewitsch, Addison, both of Ill., assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Dec. 27, 1977, Ser. No. 864,943
Int. Cl.[2] H01R *13/38*
U.S. Cl. 339—99 R **2 Claims**



1. A patchcord connector for terminating at least one insulated conductor, comprising:

a housing having first and second interlockable body members and defining an exterior rear entrance orifice through which said conductor passes, said first body member defining at least one elongated groove therein in communication with said rear entrance orifice and along a surface adjoining said second body member when said body members are in an interlocked position;

at least one contact element having a terminal portion disposed within one said groove in said housing for terminating said conductor therein;

means for piercing the insulation of said conductor to terminate said conductor in said contact element;

means for maintaining said insulated conductor in terminating position within said connector prior to and during termination of said conductor in said contact element;

strain relief means for retaining said conductor within said housing when said body members are in a finally assembled and interlocked position; and

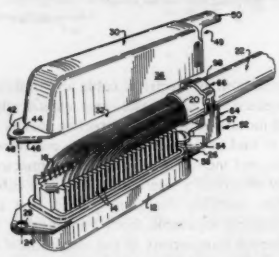
entrance means to enable electrical testing of said contact element by providing limited access from the exterior of said housing to said contact element terminal portion when said body members are in said interlocked position and said conductor is fully terminated, said limited access permitting the insertion of a probe member within said housing, said entrance means including outwardly flared sidewalls disposed at the rearward end of said groove and opening to the exterior of said housing to define said entrance orifice, and extension members being electrically connected to said contact element terminal portion and having a pair of spaced-apart outwardly flared side flange members secured at the end of said terminal portion and adapted to extend partially along said sidewalls, the terminal ends of said flange members being recessed within said entrance orifice to provide limited access to said flange members by said probe member insertable within said orifice at the junction of one of said flange members and said insulated conductor to effect positive contact of said probe member with one of said extension members.

4,195,899

ELECTRICAL CONNECTOR WITH IMPROVED STRAIN RELIEF MEANS

Frederick J. Radloff, Northlake, and Ronald F. Krolak, North Riverside, both of Ill., assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Sep. 19, 1977, Ser. No. 834,750
Int. Cl.[2] H01R *13/58*
U.S. Cl. 339—103 M **34 Claims**



1. An electrical connector comprising:

a housing including electrical contact means for terminating an electrical conductor; and

means for providing strain relief for said conductor including base clamp means securable to said housing and engageable with said conductor, and fastener clamp means adjustably securable to said base clamp means and engageable with said conductor, said base clamp means including first detent means and said fastener clamp means including second detent means mateable with said first detent means, said strain relief means including means for resisting movement of said fastener clamp means in a direction away from said housing, said first and second detent means being readily disengageable by displacement of said fastener clamp means in the direction of said housing substantially along the longitudinal axis of said gripped conductor.

4,195,900

TERMINAL HOUSING HAVING IMPROVED MOUNTING MEANS

Donald W. K. Hughes, Mechanicsburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 22, 1979, Ser. No. 22,741
Int. Cl.[2] H02B *1/06;* F16B *19/00*
U.S. Cl. 339—125 R **9 Claims**

1. A molded thermoplastic housing containing electrical contact terminals, said housing having spaced-apart integral mounting means extending from one surface thereof which are intended for reception in circular holes in a circuit board to secure said housing to said circuit board, each of said mounting means comprising:

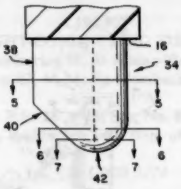
a mounting post extending from said one surface and having a free end which is spaced from said one surface,

said mounting post comprising a semi-cylindrical portion

and a collapsible retaining fin extending laterally from said semi-cylindrical portion,

said semi-cylindrical portion having an axis which extends normally of said one surface, having a flat surface which extends parallel to said axis, and having a semi-cylindrical surface which surrounds said axis, said semi-cylindrical portion having a uniform cross-section along its entire length from said one surface to said free end,

said mounting fin having a first surface which extends tangentially from said semi-cylindrical surface on one side of said axis and a second surface which extends from said flat surface adjacent to said axis, said mounting fin having an outer edge which is defined by the intersection of said first and second surfaces,



said outer edge extending parallel to said axis from said one side to an intermediate location on said post, said outer edge sloping towards said axis between said intermediate location and said free end whereby said fin has a uniform cross-section between said one side and

said intermediate location and has a diminishing cross-section between said intermediate location and said free end whereby,

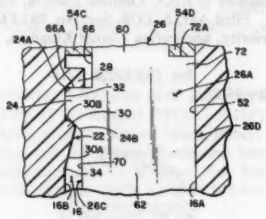
upon inserting said mounting posts into circular holes in a circuit board which holes have a diameter which is substantially equal to, and greater than, the diameter of said semi-cylindrical portion of said posts and substantially less than the maximum width of said mounting posts, said retaining fins will be progressively flexed towards said flat surface of said semi-cylindrical portion and said fins will resiliently bear against the walls of said holes and retain said housing on said circuit board.

4,195,901

ELECTRICAL DEVICE WITH TERMINAL RETAINER

Paul F. Lindlau, East Orange, N.J., assignor to Amerace Corporation, New York, N.Y.

Filed Nov. 4, 1977, Ser. No. 848,572
Int. Cl.[2] H01R *9/10*
U.S. Cl. 339—198 GA **20 Claims**



1. An electrical connector comprising:

(a) a terminal block of electrically insulating material;

(b) at least one terminal-receiving cavity in said block;

(c) an electrical terminal element adaptable for insertion in said terminal-receiving cavity, said terminal element having a key member thereon for positively securing said terminal element in said terminal-receiving cavity, said terminal element having a generally flattened shape including a pair of transversely spaced opposed sides, and further comprising: a back end portion; an intermediate portion, and a front blade portion, said intermediate portion having on one of said opposed sides said key member projecting therefrom and having on the other of said opposed sides a shoulder means, said shoulder means being spaced longitudinally and transversely from said key member and defining a terminal end region of said intermediate portion, said shoulder means being adaptable to position said front end of said terminal element relative to said terminal-receiving cavity, and being adaptable to position said key member relative to a retention member for capturing said key member upon said insertion of said terminal element; and

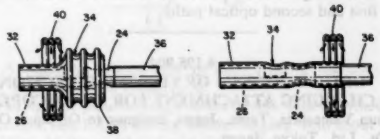
(d) said retention member extending into said terminal-receiving cavity, said retention member including a shoulder having a tapered surface and a boss spaced from said shoulder to form a recess therebetween, said key member being adaptable to be captured within said recess when said terminal is inserted in said terminal-receiving cavity, whereby said retention member and said key member provide a means for selectively securing or removing each terminal element from said terminal-receiving cavity.

4,195,902

ELECTRICAL CONNECTOR HAVING AN EXTENSIBLE, COLLAPSIBLE INSULATIVE SLEEVE

Jack E. Caveney, Hinsdale; Dale P. Brauer, Chicago Heights; William G. Cesaro, Country Club Hills, and John J. Bulanda, New Lenox, all of Ill., assignors to Panduit Corp., Tinley Park, Ill.

Filed Mar. 13, 1978, Ser. No. 885,425
Int. Cl.[2] H01R *13/12*
U.S. Cl. 339—258 S **3 Claims**



1. An electrical connector adapted to be mechanically joined to the end of a wire for completing an electrical connection between said wire and another circuit component, said connector comprising:

a metallic connector element comprising a connector portion for mechanical connection to said circuit component, and a wire-receiving portion spaced from said connector portion for accepting said wire and having a part for being mechanically joined to said wire; and

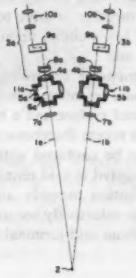
an insulative sleeve formed of heat-shrinkable material, one end of said sleeve being disposed about and held by said connector portion with the other end of said sleeve disposed between said one end and said part of the wire-receiving portion of said element, said sleeve having a memory characteristic so that upon application of heat said sleeve extends axially and shrinks radially, whereby said wire-receiving portion can be joined to said wire without interference from said sleeve and the subsequent application of heat to said sleeve causes said sleeve to extend over and shrink about the wire-receiving portion of said element, said other end of said sleeve having, in its heat unstable condition, an accordion pleat.

4,195,903

BINOCULAR MICROSCOPE WITH LENSES ROTATABLE IN THE PLANE OF OPTICAL AXES

Suminosuke Kawase, Ohmiya; Yoshihisa Uchiumi, Fujimi, and Shinichi Nishimura, Ageo, all of Japan, assignors to Tokyo Kagaku Kikai Kabushiki Kaisha, Tokyo, Japan

Filed May 13, 1977, Ser. No. 796,594
Claims priority, application Japan, May 13, 1976, 51-53854
Int. Cl.[2] G02B *21/22*
U.S. Cl. 350—36 **10 Claims**



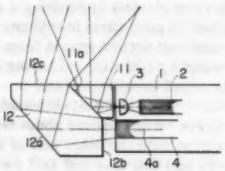
1. Binocular microscope which comprises a first optical path defined by first object lens means, first magnification changing optical means and first telescopic optical means, and a second optical path defined by second object lens means, second magnification changing optical means and second telescopic optical means, said first and second optical paths converging toward each other, each of said first and second magnification changing optical means having at least two lens means of different magnification power which are adapted to be brought alternately into alignment with the optical path, said at least two lens means being mounted for rotation about axes which are substantially perpendicular to a plane containing both said optical paths, means interconnecting the first and second magnification changing optical means so that the lens means having the same magnification power are located simultaneously in the first and second optical paths.

4,195,904

OPTICAL SYSTEM OF VIEWING-DIRECTION CHANGING ATTACHMENT FOR ENDOSCOPES

Nobuo Yamashita, Tama, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jan. 6, 1978, Ser. No. 867,498
Claims priority, application Japan, Jan. 18, 1977, 52-4095
Int. Cl.[2] G02B *23/02*
U.S. Cl. 350—68 **4 Claims**



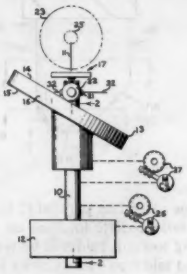
1. An optical system of a viewing-direction changing attachment for endoscopes comprising a first prism having a reflecting surface for changing the observing direction and a second prism having a reflecting surface for changing the illuminating direction and arranged so that the reflecting surface of said second prism comes to a fore position compared with the reflecting surface of said first prism when said optical system of the viewing-direction changing attachment is attached to a distal end of an endoscope, said first and second prisms being arranged that the entrance surface of said first prism becomes substantially flush with the exit surface of said second prism, said optical system of viewing-direction changing attachment being arranged to change the observing direction by attaching it at the distal end of the endoscope.

4,195,905

AUTOMATIC BIAXIAL SUN TRACKING MECHANISM FOR SOLAR ENERGY UTILIZATION DEVICES

Paul A. Hansen, 435 Dogwood Rd., West Columbia, S.C. 29169

Filed Mar. 23, 1978, Ser. No. 889,215
Int. Cl.[2] G02B *7/18*; F16H *25/16*
U.S. Cl. 350—83 **10 Claims**



1. An automatic biaxial sun tracking mechanism for solar energy utilization devices comprising means for continuously orienting said devices relative to the sun, said means including:

A. a polar shaft oriented with its longitudinal axis parallel to the earth's axis of rotation, said polar shaft having suitable means for rotation in its bearing support;

B. a declination disk rotatably connected to said polar shaft and oriented with its plane surfaces tilted with respect to the polar axis, said declination disk having suitable means for rotation relative to said polar shaft;

C. a mount structure for supporting and positioning said solar energy utilization devices, said mount structure being pivotly connected by means of a structure arm to said polar shaft and said structure arm also having moving contact with a surface or surfaces of said declination disk.

4,195,906

OPTICAL GUIDES

Noel S. Dean, Wigan, and Frank Lea, St. Helens, both of England, assignors to BICC Limited, London, England

Filed Apr. 3, 1978, Ser. No. 892,913
Claims priority, application United Kingdom, Apr. 13, 1977, 15273/77
Int. Cl.[2] G02B *5/16*
U.S. Cl. 350—96.23 **16 Claims**

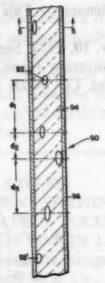
1. An optical cable comprising at least optical cable element comprising an extruded elongate body of rubber or plastics material having a transverse cross sectional shape of elongate

form and having at least one bore extending lengthwise in the body, at least one flexible optical guide housed loosely in the bore or in at least one of the bores and, embedded in said extruded elongate body and arranged side-by-side with said bore or bores, at least two separate elongate reinforcing members, the at least one bore being positioned between two reinforcing members; and, surrounding the optical cable element or elements, a flexible tube from one of the group consisting of rubber and plastics material, the bore of the tube being of such a transverse cross section having regard to the transverse cross section of the optical cable element or to the transverse cross section of the optical cable elements that there is at least one elongate space formed between the at least one element and the internal surface of the tube.

4,195,907
LIGHT-CONDUCTING FIBERS

Klaus Zamja, Sertoriusring 58, 65-Mainz-Finthen, and Diethelm Goebel, Westring 32, 65-Mainz-Mombach, both of Fed. Rep. of Germany

Filed Feb. 23, 1978, Ser. No. 880,706
Claims priority, application Fed. Rep. of Germany, Mar. 5, 1977, 7706786[U]
Int. Cl.² G02B 5/14
U.S. Cl. 350—96.32 **17 Claims**



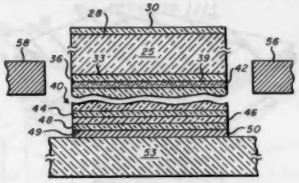
1. A clad light-conducting fiber comprising:
A. a core of light-conducting material;
B. a relatively thin substantially uniform thickness of cladding material of lower refractive index than said core, fused to said core, said core and said cladding being interfacially connected for transmitting light through said fiber, wherein the outer surface of the core and the inner surface of the cladding are in contact with each other throughout the entire length of the fiber;
C. a plurality of optical inhomogeneities wholly within said core spaced along the length of the light-conducting fiber.

4,195,908
MAGNETIC MIRROR FOR IMPARTING NON-RECIPROCAL PHASE SHIFT

Michael Kestigian, Charlton Depot, Mass.; Robert E. McClure, Locust Valley, and Eo Vaher, Huntington Station, both of N.Y., assignors to Sperry Corporation, New York, N.Y.

Filed May 15, 1978, Ser. No. 905,832
Int. Cl.² G02B 5/08
U.S. Cl. 350—151 **11 Claims**

1. A magnetic mirror for imparting a non-reciprocal phase shift to p-polarized light incident thereon, comprising:
a transparent substrate having a first optically flat surface for receiving incident light and a second optically flat surface in opposed substantially parallel relation with the first surface thereof;
a magneto-optic garnet layer on the second surface of said substrate, said garnet layer having a third surface in opposed substantially parallel relation with said second surface;
means adjacent the third surface of said garnet layer for reflecting light propagating through the third surface from said garnet layer back through said garnet layer; and

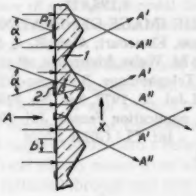


means for applying a magnetic field to said garnet layer directed normal to the plane of incidence of the p-polarized light.

4,195,909
SCANNING GRATING FOR A FOCUS DETECTOR

Werner Holle, Wetzlar, and Walter Bletz, Braunfels, both of Fed. Rep. of Germany, assignors to Ernst Leitz Wetzlar GmbH, Wetzlar, Fed. Rep. of Germany

Filed Jun. 14, 1976, Ser. No. 695,917
Claims priority, application Fed. Rep. of Germany, Jun. 19, 1975, 2527223
Int. Cl.² G02B 5/18
U.S. Cl. 350—162 R **4 Claims**



1. A scanning grating having light passing therethrough along an optical axis, comprising:
(a) an opaque pane having a series of slits with intermediary ledges, said ledges having widths ranging from about 10 to 100% of the widths of said slits; and
(b) means behind said ledges located along said optical axis and mounted on said ledges for deflecting said light passing through even numbered slits in a first direction and deflecting said light passing through odd numbered slits in a second direction, said deflected light intersecting at given points and said ledges being located opposite said given points.

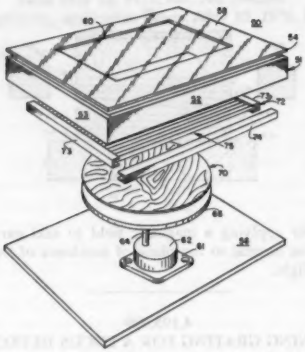
4,195,910
MULTIDIRECTIONAL VISUAL DISPLAY DEVICE

Jack Imes, Jr., 3020 W. Spencer, Appleton, Wis. 54911

Continuation-in-part of Ser. No. 661,109, Feb. 25, 1976, abandoned. This application Sep. 20, 1977, Ser. No. 835,006
Int. Cl.² G02B 27/00
U.S. Cl. 350—167 **8 Claims**

1. A device for producing continuously shifting multidirectional visual displays, said device comprising a refracting member having a plurality of adjacent elongated lens elements with an obverse surface and a reverse surface, a disk-shaped member with a design on at least one surface thereof positioned with said one surface substantially parallel to the reverse surface of said refracting member and spaced therefrom a distance substantially equal to one lens radius, motor means for provid-

ing rotational movement between said disk member having the design thereon and said refracting member, and means for maintaining the parallel and spaced relationship between said design and refractory members during the relative movement therebetween, whereby continuously shifting multidirectional



visual displays are produced in which movement is in four directions simultaneously at the obverse surfaces of said refracting member by cooperation between said refracting member and said design member during the rotational movement therebetween.

4,195,911

PANORAMIC IMAGE GENERATING SYSTEM

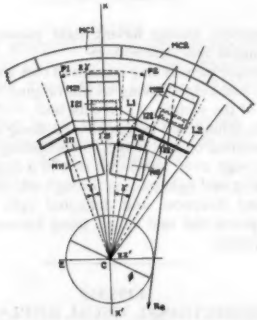
Pierre P. A. Bougon, Elancourt; Alain R. A. Parmentier, Palaiseau, and Pierre M. Weiss, Maurepas, all of France, assignors to Le Materiel Telephonique, Boulogne-Billancourt, France

Filed Jul. 25, 1977, Ser. No. 818,413

Claims priority, application France, Jul. 19, 1976, 76 23181

Int. Cl.[2] G02B *27/14*

U.S. Cl. 350—171 **4 Claims**



1. Apparatus for generating an uninterrupted evolutive panoramic image comprising:

a plurality of first television monitors, evenly set in an arc of a first circle, with their screens outwardly oriented and equally distant from the axis of said first circle, for generating separated portions of a prismatic image of an evolutive panorama;

a plurality of second television monitors, identical to the first ones and evenly set in an arc of a second circle larger than said first circle, with their screens inwardly oriented and each oriented to the gap between successive ones of said first television monitors, for generating missing portions of said prismatic image corresponding to the missing parts of said panorama;

a plurality of semi-transparent plane mirrors joined edge to edge and inserted between the screens of said first and said second television monitors and inwardly bent for combining said separated and said missing portions of image in an uninterrupted prismatic image, observable from the outside of said semi-transparent plane mirrors;

a plurality of concave mirrors juxtaposed in a section limited in width of a reflecting subequatorial zone centred on said axis and located farther from it than said second television monitors, for creating an uninterrupted evolutive panoramic image seen at infinity in said reflecting zone from an inner and limited observation region which surrounds said axis by means of a reflexion of said uninterrupted prismatic image in said reflecting means.

4,195,912

ZOOM LENS SYSTEM

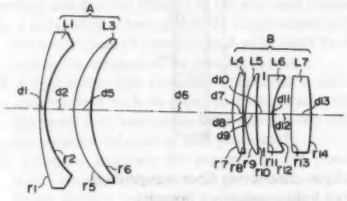
Yoshikazu Doi; Yutaka Sakai, and Kazunori Ohono, all of Omiya, Japan, assignors to Fuji Photo Optical Co., Ltd., Omiya, Japan

Filed Nov. 10, 1977, Ser. No. 850,453

Claims priority, application Japan, Nov. 11, 1976, 51-135546

Int. Cl.[2] G02B *15/16*

U.S. Cl. 350—184 **7 Claims**



1. A zoom lens system having an optical axis comprising a front lens group comprising a negative meniscus lens L1 at the front convex to front and a positive lens L3 having the face of greater curvature faced to front, and a rear lens group comprising a positive lens L4 having the face of greater curvature faced to front, a positive meniscus lens L5 convex to front, a negative lens L6 having the face of greater curvature faced to rear and a positive lens L7, the front and rear lens groups being moved in the opposite directions along said optical axis to vary the focal length of the lens system, wherein the zoom lens system satisfies the following conditions where the focal length of the front lens group is fA, the radius of curvature of the concave face of the negative meniscus lens L1 is r2, the radius of curvature of the front face of the positive lens L3 is r5, the radius of curvature of the convex face of the positive meniscus lens L5 is r9, the radius of curvature of the rear face of the negative lens L6 is r12 and the Abbe dispersion number of the positive lens L3 is $\nu 3$;

$-2.3 < fA < -1.5$,

$0.45 < r2 < 0.65$,

$0.5 < r5 < 1.0$,

$0.4 < r9 < 0.6$,

$0.3 < r12 < 0.55$, and

$\nu 3 < 40$,

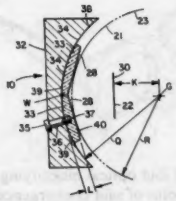
said values being normalized to a wide-angle focal length of one (fw=1.0).

4,195,913

OPTICAL INTEGRATION WITH SCREW SUPPORTS

Dixon D. Dourte, Costa Mesa; Richard L. Pierce, Riverside, and Walter J. Spawr, Corona, all of Calif., assignors to Spawr Optical Research, Inc., Corona, Calif.

Filed Nov. 9, 1977, Ser. No. 849,932
Int. Cl.[2] G02B 7/18, 5/08
U.S. Cl. 350—292 6 Claims



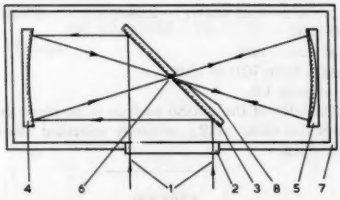
1. An optical integrator, comprising:
a base having a spherical concave surface and a hole;
a plurality of reflecting surfaces for reflecting a plurality of segments of electromagnetic radiation thereby resulting in a plurality of reflected segments of electromagnetic radiation, the reflecting surfaces being positioned so that a plurality of reflected segments of electromagnetic radiation intersect at a target;
a body having a threaded hole and a front reflecting surface and a rear flat circular surface parallel to the front reflecting surface of the body; and
a screw wherein the rear flat circular surface of the body is secured to the spherical concave surface of the base by placing the screw through the hole in the base and into the threaded hole of the body.

4,195,914

MIRROR ARRANGEMENT WITHIN AN EVACUATED SPACE FOR ACCURATELY FOCUSSING A LARGE DIAMETER, HIGH POWER LASER BEAM

John L. Hughes, Aranda, Australia, assignor to Quentron Optics Pty. Limited of c/-Stephen Su & Co., Adelaide, Australia

Filed Aug. 2, 1978, Ser. No. 930,319
Claims priority, application Australia, Aug. 5, 1977, PD1116
Int. Cl.[2] G02B 5/10
U.S. Cl. 350—294 4 Claims



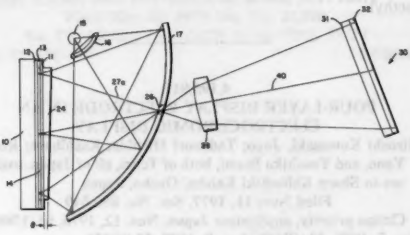
1. An arrangement of three mirrors comprising two concave end mirrors and a flat central mirror within an evacuated chamber, such that a laser beam containing two or more pulses entering the chamber through an optically polished window, the said laser beam being incident on the optically flat central mirror, orientated at 45° to the central axis of the three mirror system, which reflects the incident beam onto the concave surface of one of the end mirrors such that the laser beam focusses in an aperture in the centre of the flat mirror and diverges onto the surface of the second said end mirror which in turn refocusses the laser beam along the central axis so that it may overlap with the first focus region in the aperture in the flat mirror at various positions along the said central axis of the three mirror system.

4,195,915

LIQUID CRYSTAL IMAGE PROJECTOR SYSTEM

William R. Lichty, Culver City; John J. Ferrer, Los Angeles; Lacy G. Cook, Hawthorne, and Michael N. Ernstoff, Los Angeles, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed May 5, 1978, Ser. No. 903,348
Int. Cl.[2] G02F 1/13
U.S. Cl. 350—345 9 Claims



1. In a liquid crystal image projector system of the type having as its optical elements liquid crystal display means for creating an image to be displayed, light source means for illuminating said liquid crystal display means, imaging surface means, and a projection lens means for focusing said liquid crystal display means image onto said imaging surface means, the improvement comprising:
(a) aspheric reflector means having a concave surface for gathering and concentrating light from said light source onto the surface of said liquid crystal display means;
(b) stop means formed by an optical aperture in said aspheric reflector means; and
(c) means for positioning said elements of said image projector system for transmitting light from said light source to said concave surface of said aspheric reflector to be reflected by it through a first transparent surface of said liquid crystal display means onto a reflective electrode of said liquid crystal display means from which light forming said image is reflected through said stop means and thence through said projection lens means to form said image on said imaging surface means.

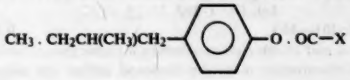
4,195,916

LIQUID CRYSTAL COMPOUNDS

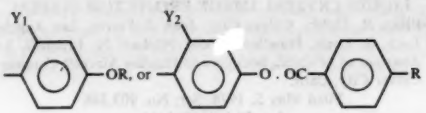
David Coates, Bishops Stortford; George W. Gray, Cottingham, and Damien G. McDonnell, Hull, all of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Apr. 5, 1978, Ser. No. 893,611
Claims priority, application United Kingdom, Apr. 5, 1977, 14296/77
Int. Cl.[2] C07C 69/74, 69/78; C09K 3/34; G02F 1/13; G01K 11/16; C07C 69/63, 69/65, 69/90
U.S. Cl. 350—346 12 Claims

1. A liquid crystal compound which is an optically active ester having the formula:



wherein X is



R is an alkyl group, which may be chiral, having less than 15 carbon atoms, Y_1 is halogen or methyl and Y_2 is halogen or methyl.

4,195,917

FOUR-LAYER DISPLAY ELECTRODE IN AN ELECTROCHROMIC DISPLAY

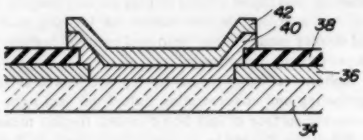
Hiroshi Kuwagaki, Joyo; Tadanori Hishida, Kashihara; Kohzo Yano, and Yasuhiko Inami, both of Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 11, 1977, Ser. No. 850,549

Claims priority, application Japan, Nov. 12, 1976, 51/136635; Jun. 7, 1977, 52/67459; Jun. 9, 1977, 52/68434

Int. Cl.² G02F *1/17*

U.S. Cl. 350—357 **16 Claims**



1. An electrochromic display device including an electrochromic material held between two electrode carrying support plates, at least one of which is transparent and and carrying a display electrode means thereon, the latter manifesting reversible variations in light absorption properties upon current being supplied thereto, said disply electrode means comprising:

a first transparent conductive layer formed on selected portions of said transparent plate;

a protective insulation layer formed on selected portions of said first transparent conductive layer;

a second transparent conductive layer formed on adjacent portions of said protective insulation layer and said first transparent conductive layer, said second transparent conductive layer being in electrical communication with said first transparent conductive layer; and

an inorganic solid film means formed on substantially the entire surface of said second transparent conductive layer for exhibiting a coloration effect in response to the application of current to said first transparent conductive layer.

4,195,918

ILLUMINATING SPECTACLES WITH VARIABLE MAGNIFYING POWER

Charles Freche, 9 rue Villebois Mareuil, 75017 Paris, and Jacques Lotteau, 22, rue de Breteuil, 78670 Villennes sur Seine, both of France

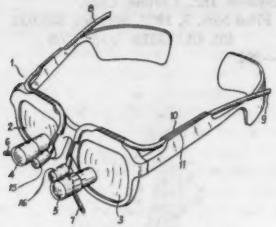
Filed Oct. 20, 1978, Ser. No. 954,731

Claims priority, application France, Nov. 14, 1977, 77 34106

Int. Cl.² G02B *23/18, 25/02*

U.S. Cl. 351—158 **9 Claims**

1. In a pair of spectacles wherein a frame means includes a pair of transparent members disposed before the respective eyes of a wearer, the combination including two optical magnifying means supported on said frame means with their optical axes arranged to converge, and a source of cold light terminating in focussing means to direct said light in the plane of the



convergent axes of said optical magnifying means and to concentrate it at the point of convergence.

4,195,919

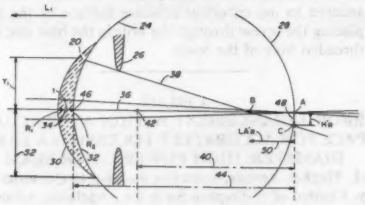
CONTACT LENS WITH REDUCED SPHERICAL ABERRATION FOR APHAKIC EYES

William A. Shelton, 295 Harvard St. #408, Cambridge, Mass. 02139

Filed Oct. 31, 1977, Ser. No. 846,829

Int. Cl.² G02C *7/04*

U.S. Cl. 351—160 R **39 Claims**



1. A contact lens for the aphakic eye, said lens having a rear substantially conicoidal surface of eccentricity E_2, a front substantially ellipsoidal surface of eccentricity E_1, a vertex thickness t, a power D and an index of refraction N_1', where

$E_2=0.5200$,

$E_1=3.67695-4.82760(N_1')+2.64699(N_1')^2-0.50402(N_1')^3 \pm 0.1000$,

R_2=at least 7 mm,

D ranges from 10.0 to 18.0,

N_1'=at most 1.6,

Semidiameter of the optical surface is no more than 0.715 times the value of R_2, whereby spherical aberration is controlled.

4,195,920

GOLF GAME PROJECTOR

Jack A. Russell, Spring Lake; Goodrich B. Pratt, Grand Haven, and Anthony J. Gretzky, Muskegan, all of Mich., assignors to Brunswick Corporation, Skokie, Ill.

Division of Ser. No. 618,002, Sep. 30, 1975, Pat. No. 4,168,115, which is a division of Ser. No. 426,505, Dec. 20, 1973, Pat. No. 3,924,122, which is a division of Ser. No. 69,768, Sep. 4, 1970, Pat. No. 3,802,614. This application Jan. 10, 1977, Ser. No. 758,353

Int. Cl.² G03B *27/00*

U.S. Cl. 353—26 A **7 Claims**

1. A film searching apparatus for searching desired information from a film which is provided with many kinds of information and search marks thereon, a search mark being provided

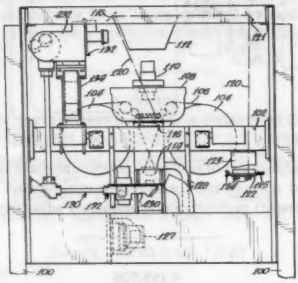
for at least one of a series of associated information groups on the film comprising:

(a) feed means for transporting the film;

(b) light source means for irradiating said search mark;

(c) mark detection means for receiving a flux of light projected on the search mark to generate a detection signal;

(d) pulse generating means operated in cooperation with said feed means for generating a pulse signal in response to the feed of film;



(e) gate means for receiving said detection signal and said pulse signal and selectively passing either one of said signals;

(f) counter means for counting signals passed through said gate means and generating a control signal upon a count of a predetermined value;

(g) gate control means responsive to said control signal for controlling the selection of the signal to be passed through said gate means; and

(h) transport control means for controlling the film feed of said feed means in response to said control signal.

4,195,921

PHOTOGRAPHIC APPARATUS WITH MEANS FOR DIFFERENTLY INDICATING THE INTENSITY OF SCENE LIGHT FOR DIFFERENTLY SENSITIVE FILMS

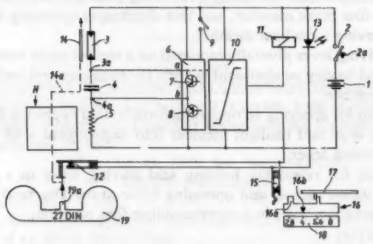
Peter Lermann, Narring; Karl Wagner, Munich, and Dieter Engelsmann, Unterhaching, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed Mar. 29, 1978, Ser. No. 891,270

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1977, 2714149

Int. Cl.[2] G03B *7/08, 17/18*

U.S. Cl. 354—21 **10 Claims**



1. In a photographic apparatus having a housing for reception of containers of first and second types which respectively confine high-sensitivity and lower-sensitivity photographic films and the first type of which has an external formation absent from the second type, the combination of exposure control means including light-sensitive resistor means disposed in the path of scene light; indicating means normally operative to indicate the intensity of scene light as a function of the condition of said resistor means; and disengaging means for rendering said indicating means inoperative in response to insertion into said housing of a container of said first type and upon ascertaining the presence of the external formation of the latter.

4,195,922

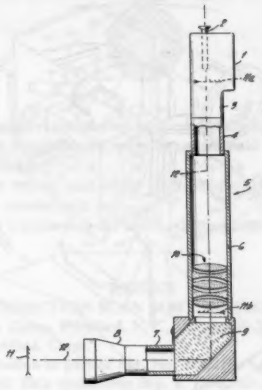
SNORKEL CAMERA SYSTEM

Stephen Hajnal, 5600 Riverdale Ave., Bronx, N.Y. 10471

Filed Mar. 22, 1979, Ser. No. 22,880

Int. Cl.[2] G03B *17/48;* **G02B** *23/08;* **F16L** *37/24*

U.S. Cl. 354—79 **8 Claims**



1. A snorkel camera system, comprising a camera body means having a camera housing with a light admitting opening therein, means for recording images transmitted through said light admitting opening, and an eyepiece having a lens therein for viewing the object being photographed; an elongated hollow housing means having one end arranged for light entry and the other end for light egress, the light-egress end of said housing means being detachably secured to said camera body means at said light admitting opening; a camera lens means detachably secured to the light-entry end of said housing means; and optical means for providing an optical path from said camera lens means through said hollow housing means to and through the light admitting opening of said camera body means; said optical means consisting essentially of a prism means in said housing means adjacent said light entry end and having a first face disposed toward said camera lens means and a second face perpendicular to said first face and disposed toward said camera body means, and a relay lens means in said housing means between said prism means and said light egress end, said prism means being operable to erect and reverse the image transmitted by said camera lens means through said first face and to transmit said erected non-reversed image to said relay lens means through said second face, whereby an erect non-reversed image of the object is viewed through said eyepiece.

4,195,923

SYSTEM FOR PRODUCING PHOTOGRAPHS

Jack L. Craven, 1006 N. Princeton, Fullerton, Calif. 92631; Ernest B. Marjoram, 17874 E. Baintree Ave., Rowland Heights, Calif. 91745; H. Dale Sandeffer, 1012 Laguna, Anaheim, Calif. 92801, and Charles J. Stewart, 2827 Westbrook Dr., Apt. 507, Fort Wayne, Ind. 46805

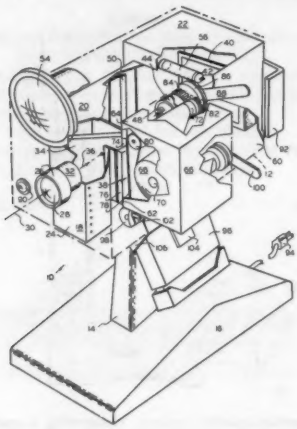
Filed Mar. 6, 1978, Ser. No. 883,799

Int. Cl.[2] G03B *17/50, 17/24, 17/26;* **G03D** *17/00*

U.S. Cl. 354—91 **36 Claims**

1. An apparatus for producing photographs comprising a

camera, film processor, and a septum, the camera including means for producing a photographic exposure, a camera septum receptacle and means for selectively transporting at least a portion of said photographic exposure into a transported position disposed in said camera septum receptacle, said processor including means for developing said exposure into a photographic print, a processor septum receptacle and means for transporting said exposure from said processor septum receptacle into and through said processor, said septum including a light impervious film chamber, a film transfer aperture, and an end portion complementary to said camera and said processor septum receptacles, said film transfer aperture communicating between said film chamber and the exterior of said end portion, said aperture and said chamber being in light-tight communication with the interior of said camera and said processor receptacles when said end portion of said septum is received in said camera and processor receptacles, respectively, said portion of said photographic exposure being received in said septum when said septum is received in said camera septum receptacle, said septum further including manually operable means for selectively drawing and ejecting said exposure into and from said film chamber through said aperture and including a manually operable slide element and a film grasping mechanism secured to said slide element, said grasping mechanism being operable between grasping and open conditions in response to movement of said slide element to thereby grasp and release said film exposure, respectively, and light blocking means for preventing entry of light into said film chamber.



4,195,924

CAMERA WITH ZOOM LENS

Otto Stemme, Munich; Günther Kirchhof, Taufkirchen; Peter Lermann, Narring; Volkmar Stenzenberger, Unterhaching, and Anton Theer, Munich, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

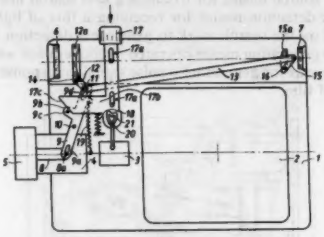
Filed Jul. 25, 1978, Ser. No. 927,817

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1977, 2734308; Mar. 30, 1978, 2813590

Int. Cl.[2] G03B *3/00, 13/10*

U.S. Cl. 354—197 **12 Claims**

1. In a camera, a combination comprising a variable lens having lens components all located on and adjustable lengthwise of a first optical axis common to them, between a first and at least one second setting; an eyelevel viewfinder having an inlet window, and outlet window spaced from said inlet window along a second axis substantially parallel to said first axis and with said inlet window arranged on the line of sight, and means including movable elements for changing the image area visible in said viewfinder in dependence upon the setting of said variable lens; and actuating means operatively connected with said variable lens and with said movable elements for effecting adjustment of said lens components between said first and second settings and for effecting concomitant movement of said elements in dependence upon said adjustments.



4,195,925

DIAPHRAGM-OPERATING DEVICE FOR USE IN AN INTERCHANGEABLE-LENS TYPE CAMERA

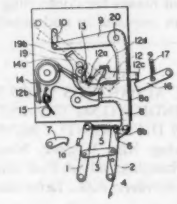
Haruo Ishii, Wako, and Akihiro Arai, Urawa, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 1, 1978, Ser. No. 911,576

Claims priority, application Japan, Jun. 1, 1977, 52-64220

Int. Cl.[2] G03B *9/02*

U.S. Cl. 354—270 **5 Claims**



1. A diaphragm operating device for an interchangeable-lens camera of the type having a diaphragm operating lever for operating a diaphragm or stop-down mechanism for a lens to charge said diaphragm or stop-down mechanism:

said diaphragm operating lever being pivotally mounted on a first pivot member, and said diaphragm operating lever having a resilient member;

a driving lever pivotally mounted on a second pivot member and having an abutment portion for engaging said resilient member;

means for applying an operating force to said operating lever to urge said resilient member into engagement with said driving lever;

means for releasably holding said driving lever in a first position against said operating force to thereby hold said operating lever in a corresponding first position;

a mirror;

a lifting lever pivotally mounted on said second pivot member, said lifting lever being operatively coupled to said mirror to lift said mirror from a lowered position when said lifting lever is in a first position corresponding to the first positions of said driving member and said operating member and to lift said mirror to a raised position when said lifting member is in a second position;

means for applying a driving force to said lifting lever to

urge said lifting lever from its first position to its second position;

an engaging portion on one of said driving lever and said lifting lever for engaging the other one of said driving lever and said lifting lever when said driving lever and said lifting lever are in their said first positions but permitting said driving lever to be disengaged from said lifting lever, the forces applied by said operating force applying means and said driving force applying means being such that said driving lever moves ahead of said lifting lever upon said driving lever being released by said releasing means to provide a sufficient time for bouncing to dissipate.

4,195,926

DEVICE FOR DISPLAYING A PHOTOMETRY CONDITION IN A FINDER OF A CAMERA

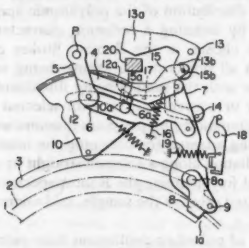
Akira Katayama, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed May 23, 1978, Ser. No. 908,828

Claims priority, application Japan, May 28, 1977, 52-68136[U]

Int. Cl.² G03B *9/02, 17/20*

U.S. Cl. 354—273 **2 Claims**



1. In a device for displaying information in a finder of a camera having a signal receiving member for transmitting to a photometer a stop information from a signal generating member provided at a lens structure, the signal receiving member being manually movable between interlocking position where the signal receiving member can receive the stop information in interlocking relation with the lens structure and a non-interlocking position where the signal receiving member cannot receive the stop information by blocking the interlocking relation between the signal receiving member and the lens structure, the improvement comprising: displaying means associated with the signal receiving member to indicate in the finder in accordance with the displacement of the signal receiving member whether fully opened photometry or stopped photometry is effected.

4,195,927

DOUBLE TRANSFER ELECTROPHOTOGRAPHY

Richard A. Fotland, and Jeffrey J. Carrish, both of Holliston, Mass., assignors to Dennison Manufacturing Company, Framingham, Mass.

Filed Jan. 30, 1978, Ser. No. 873,747

Int. Cl.² G03G *15/00*

U.S. Cl. 355—3 TE **16 Claims**

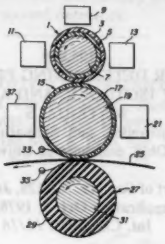
2. Electrophotographic apparatus employing a double transfer of an image comprising:

a photoconductor member containing a photoconductive surface layer, a conducting inner substrate, and a semiconductive layer interposed between the photoconductive surface layer and the inner substrate;

means for uniformly charging said photoconductive surface layer;

means for exposing the uniformly charged photoconductive surface layer to a pattern of light and shadow representing an original to be reproduced, whereby the surface layer is selectively discharged and a latent electrostatic image is produced thereon;

dielectric image drum means having an insulating surface and a conducting substrate onto which said latent electro-



static image is transferred by means of the ionization of air in a gap between said image drum and said photoconductive member;

means for toning said latent electrostatic image to form a visible counterpart; and

means for transferring the toned, visible image to a receptor.

4,195,928

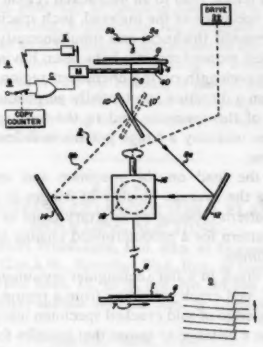
TWO DIRECTION SCAN SORTING TECHNIQUE

Clarence A. Green, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 784,215, Apr. 4, 1977, abandoned. This application Sep. 1, 1978, Ser. No. 939,167

Int. Cl.² G03B *27/42*; G03G *15/28*

U.S. Cl. 355—51 **2 Claims**



1. In a copier employing bidirectional scanning optics means which causes rotation of the image being copied onto copy sheets and a platen for copying a document, said platen being scanned from opposite sides by said bidirectional scanning means and a collator with multiple bins for receiving and collating copies made from a document on said platen, the improvement comprising:

(a) selector means for controlling the number of copies to be made by controlling the number of bidirectional scans of said platen; and

(b) return means for promptly automatically returning said scanning means to a preset first side of said platen without scanning said platen after a pre-selected number of copies has been made only if the scanning means is at the opposite side of the platen after the previously selected number of copies has been made so that the copier is ready for copy-

ing of either even or odd numbers of copies of a document next selected.

4,195,929

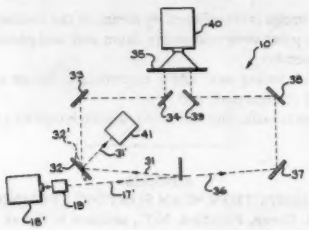
METHOD FOR DETERMINING PROPERTIES OF OPTICALLY ISOTROPIC AND ANISOTROPIC MATERIALS

Demetrios D. Raftopoulos, and Stamatios V. Kartalopoulos, both of Toledo, Ohio, assignors to University of Toledo, Toledo, Ohio

Continuation-in-part of Ser. No. 761,128, Jan. 21, 1977, Pat. No. 4,119,380. This application Oct. 3, 1978, Ser. No. 948,317

Int. Cl.² G01B *11/16*

U.S. Cl. 356—32 **5 Claims**



1. A method of evaluating properties of transparent optically isotropic and optically anisotropic materials comprising the steps of:

applying a tensile load to an uncracked region of a flat rectangular specimen of the material, such specimen having a predetermined thickness and simultaneously impinging a collimated monochromatic light beam having a predetermined wavelength on the uncracked region of the specimen from a direction substantially perpendicular to a flat surface of the specimen and to the load applied to the specimen whereby a fringe pattern is reflected from the specimen;

changing the load on the specimen and simultaneously counting the average number of fringes in the reflected fringe pattern crossing an arbitrary point in the reflected fringe pattern for a predetermined change in the load on the specimen;

forming a crack in a flat rectangular specimen of the same material, said crack extending from a region at the center of a long edge of said cracked specimen into said cracked specimen a distance to assure that caustics formed from a constrained region adjacent a crack tip are free from the influence of free surfaces of the specimen;

applying a tensile load to said cracked specimen in a direction perpendicular to said crack and simultaneously impinging a collimated monochromatic light beam on the constrained region in said cracked specimen adjacent the crack tip from a direction substantially perpendicular to a flat surface of the specimen and to the load applied to the specimen whereby caustics are transmitted through and reflected from the specimen;

measuring the effective diameters of the transmitted and reflected caustics at locations spaced equidistant from and on either side of the specimen; and

determining the ratio of Poisson's ratio to the modulus of elasticity for the material from said measured caustic diameters, said predetermined load change, said fringe count, said wavelength and said predetermined thickness.

4,195,930

OPTICAL RAMAN MICROPROBE WITH LASER

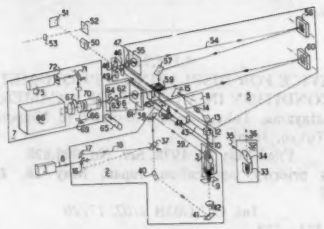
Michel M. Delhaye; Paul A. Dhamelincourt, both of Villeneuve d'Ascq, and Edouard F. da Silva, Lille, all of France, assignors to Agence Nationale de Valorisation de la Recherche (ANVAR), Neuilly-sur-Seine, France

Filed Jul. 5, 1977, Ser. No. 812,650

Claims priority, application France, Jul. 2, 1976, 76 21539

Int. Cl.² G01J *3/44*

U.S. Cl. 356—301 **14 Claims**



1. A Raman microprobe for the production of micrographic images of the distribution of the polyatomic species in a sample, obtained by isolating a radiation characteristic of a selected species chosen in the Raman, Stokes or anti-Stokes spectrum with all points of the sample being simultaneously illuminated, or with the sample being illuminated along a selected straight or curved line, or with selected points of the sample being illuminated by pin-point illumination, said microprobe also being adapted for obtaining the intensity curve of the Raman radiation along a selected straight or curved line of the sample and for obtaining the Raman spectra of very small localized selected areas of the sample, said microprobe including:

(a) a source of pulsed or continuous laser radiation,

(b) a sample illuminating device incorporating means for the selective illumination of a sample completely, or along a selected straight or curved line, or at a selected point,

(c) a microscope for providing an enlarged image of the sample,

(d) an optical transfer system having mobile optical elements selectively operable to form the image either on the entrance slit of a monochromator or on a grating of a monochromator,

(e) a monochromator having entrance and exit slits and at least two gratings, the surfaces of the gratings being conjugated optically by an optical system located intermediate of the gratings,

(f) an optical out-system located at the exit slit of the monochromator and

(g) light detection means including at least one photomultiplier, an image intensifier tube and a camera, whereby the micrographic image of a sample or its spectrum may be visualized and its intensity curve may be recorded,

(h) said optical out-system having mobile optical elements selectively operable to form on the photocathode of the image intensifier tube an image formed on the surface of the second monochromator grating or an image formed on the exit slit of the monochromator.

4,195,931

CLEAR AIR TURBULENCE DETECTOR

Elmer H. Hara, Ottawa, Canada, assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

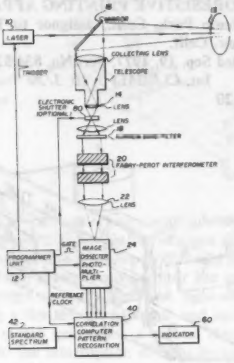
Filed May 18, 1978, Ser. No. 907,063

Int. Cl.² G01B *9/02*

U.S. Cl. 356—346 **10 Claims**

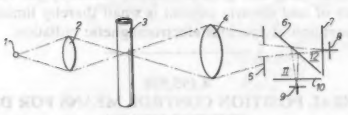
1. Apparatus for remote detection of the location and intensity of clear air turbulence comprising:

(a) a high peak power pulsed laser source to direct a laser beam at a region where clear air turbulence may exist which causes back scattering of light from said beam;
(b) an ultra high resolution Fabry-Perot interferometer to pick up the back scattered light and provide a circularly symmetric interference pattern characteristic of said light;
(c) an image dissector having a plurality of concentric ring anodes with parallel output electrodes to receive and analyze said circularly symmetric interference pattern to determine the spectrum of said light;



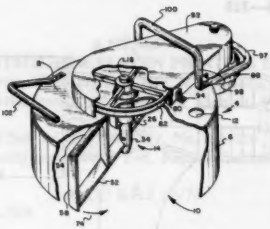
(d) reference means providing a time reference for measuring distance to said region and a standard spectrum for comparison with said back scattered light;
(e) correlation means receiving the output from said image dissector for comparison with said standard spectrum representing an absence of clear air turbulence; and
(f) means activated by said correlation means for indicating the occurrence of a significant departure from the standard spectrum.

4,195,932
ABSORPTION SPECTROPHOTOMETER
Susan R. Popelka, Gurnee, Ill., assignor to Abbott Laboratories, North Chicago, Ill.
Filed Jul. 3, 1978, Ser. No. 921,304
Int. Cl.[2] G01N *21/02*
U.S. Cl. 356—407 **2 Claims**



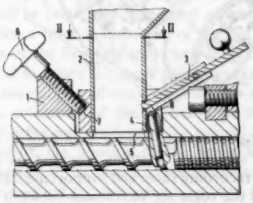
1. An absorption spectrophotometer comprising:
(a) a light source for irradiating a test sample;
(b) a first lens located between the light source and test sample, positioned for focusing light to a location within the test sample;
(c) a second lens positioned for receiving light transmitted through the test sample, said second lens concentrating light received from the test sample;
(d) a dichroic filter positioned for receiving light from the second lens, said dichroic filter separating light from the second lens into a test beam and a reference beam, directing the test beam to a first interference filter which passes light corresponding to an absorption band of the test sample to a first detector, and directing the reference beam to a second interference filter which passes a band of light outside the absorption band of the test sample to a second detector, said first and second detectors located equal distances from the dichroic filter said second lens focusing light on the first and second detectors; and
(e) a light shielding element defining an aperture for passage of light from the second lens to the dichroic filter, said light shielding element limiting the amount of light passing to the dichroic filter and thereby preventing saturation of the first and second detectors.

4,195,933
METHOD OF MIXING MORTAR
Gerold W. Brailsford, 490 N. 970 East, Springville, Utah 84663
Division of Ser. No. 685,737, May 13, 1976, Pat. No. 4,104,737.
This application May 5, 1978, Ser. No. 903,184
Int. Cl.[2] B28C *5/16*
U.S. Cl. 366—2 **4 Claims**



1. A method of mixing mortar and like material comprising
(a) placing the material to be mixed onto a substantially flat surface,
(b) placing over the material and onto the surface a portable mixer having a housing opening at the bottom thereof, said mixer being placed with the opening facing downwardly for generally enveloping the material, said mixer further including a generally flat elongate mixer blade disposed at an acute angle with respect to the plane of the opening to move within the housing to contact and mix material over which the housing is placed and means for driving said mixer blade to move within the housing, and
(c) operating the driving means to move the mixer blade and thereby mix the material.

4,195,934
PLASTICIZING CYLINDER FOR A PLASTICS MOULDING MACHINE
Hermann Spanier, Windhagen, Fed. Rep. of Germany, assignor to Dr. Boy G.m.b.H., Fernthal, Fed. Rep. of Germany
Filed Mar. 15, 1979, Ser. No. 20,744
Claims priority, application Fed. Rep. of Germany, Mar. 17, 1978, 7808169
Int. Cl.[2] B28C *7/14*
U.S. Cl. 366—76 **5 Claims**



1. A combination of a plasticising cylinder for a plastics moulding machine with a feed hopper, said cylinder having a mounting surface for engagement with said hopper, wherein said cylinder and said hopper carry cooperating projection and recess means and said combination further includes fastening

means fastening said hopper to said cylinder, said fastening means being constructed and arranged to exert a force on said hopper along said mounting surface and said projection means being obliquely inclined to said mounting surface so that it exerts on said hopper a force having a component towards said mounting surface.

4,195,935

APPARATUS FOR TREATING MATERIALS CONTAINING COCOA BUTTER

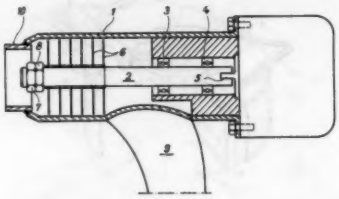
Helmut Sollich, Kalletal, Fed. Rep. of Germany, assignor to Sollich KG Spezialmaschinenfabrik, Bad Salzuflen, Fed. Rep. of Germany

Filed May 3, 1978, Ser. No. 902,344

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1977, 2725180

Int. Cl.² B01F *7/10*

U.S. Cl. 366—325 **7 Claims**



1. A process for treating substantially viscous materials containing cocoa butter with regard to air entrained therein during processing to uniformly disperse the air throughout the material, including the steps of directing the viscous material to flow through a conduit past a plurality of separating blades axially spaced from each other, and rotating the axially spaced blades to impart turbulent motion to the material which flows together again downstream of said elements, with the rotating blades beating and distributing the air bubbles entrained in the material.

4,195,936

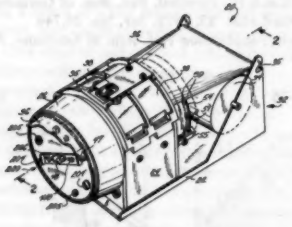
ROTARY PRINTER AND ROTOR STRUCTURE

Leslie H. Gard, and Darwin E. Phillips, both of Huntsville, Ala., assignors to SCI Systems, Inc., Huntsville, Ala.

Filed Oct. 28, 1977, Ser. No. 846,549

Int. Cl.² G01D *15/18*

U.S. Cl. 400—124 **21 Claims**



1. In or for a rotary printer including a shaft, a rotor mounted on said shaft, a stylus mounted on said rotor for printing on a recording sheet and support means for supporting the stylus on the rotor for movement between extended outward recording and retracted inward non-recording positions relative to the axis of rotation of said rotor; said support means including an elongated resilient stylus support member, a mounting member secured to said rotor, said stylus support member being attached adjacent one of its ends to said mounting member, said stylus being attached to said stylus support member adjacent its other end, said support member being flexible in a direction towards and away from the axis of rotation of said rotor, being substantially rigid in the axial direction, and being mounted so as to bias said stylus towards said inward position, whereby upon rotation of said rotor said stylus support member permits the stylus to move outwardly from the axis of rotation of said rotor to said extended recording position under the influence of centrifugal force.

4,195,937

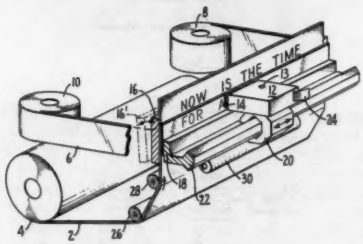
ELECTRORESISTIVE PRINTING APPARATUS

Paul Baran, Menlo Park, Calif., assignor to Termcom, Inc., Mountain View, Calif.

Filed Sep. 19, 1977, Ser. No. 834,526

Int. Cl.² B41J *3/10, 3/20*

U.S. Cl. 400—120 **7 Claims**



3. A system for electroresistive writing on a conductive medium comprising:

a conductive grounding member for contacting said conductive medium along substantially the entire width of the writing area,

a conductive carriage track electrically connected to said grounding member,

head assembly means translatably mounted on said carriage track including

means for electrically contacting said carriage track to provide a movable ground contact,

writing electrodes for contacting said conductive medium adjacent said grounding member, and

means connected to said movable ground contact and said writing electrodes for selectively applying an electric current through said writing electrodes, said conductive medium and said ground contact, whereby the resulting path of said electric current is small thereby limiting the generation of spurious electromagnetic radiation.

4,195,938

LATERAL POSITION CONTROL MEANS FOR DATA PRINTER HEADS

Juan F. Velazquez, Ann Arbor, Mich., assignor to Sycor, Inc., Ann Arbor, Mich.

Filed Feb. 9, 1977, Ser. No. 766,243

Int. Cl.² B41J *3/04*

U.S. Cl. 400—124 **19 Claims**

1. A data printing machine comprising:

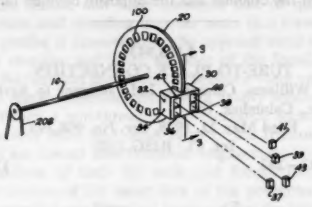
laterally movable printing means for printing information on a printing surface;

driving means coupled to said printing means for moving the printing means along a lateral path across said surface;

encoder means operatively rotationally coupled to at least one of said driving means and said printing means, and including means for producing logical signals embodying information indicative of the position of said printing means along said lateral path and the direction of movement of said printing means therealong, said encoder means including rotating means having at least one se-

quence of laterally adjacent and mutually spaced light-passing means aligned with one another along a common circular path particular to said one sequence, said rotating means having intervening light-interrupting means between the light-passing means; and

first and second mutually spaced light-detecting means disposed in direct lateral alignment with one another along said particular circular path and positioned adjacent said rotating means, said first and second light-detecting means



each being in common registry with substantially the same locus along said circular path of said one aligned sequence of light-interrupting means such that said first and second light-detecting means both monitor the same portion of said aligned sequence, said first light-detecting means generating a first electrical signal and said second light-detecting means generating a second electrical signal in response to the interruption of light by said sequence of light-interrupting means.

4,195,939

TYPE BAR ACTUATING MECHANISM FOR A TYPEWRITER

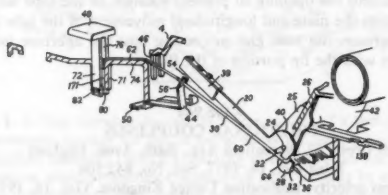
Robert Denby, Nottingham, England, assignor to Dobson Park Industries, Ltd., Nottingham, England

Filed Sep. 15, 1977, Ser. No. 833,592

Claims priority, application United Kingdom, Sep. 21, 1976, 39138/76

Int. Cl.² B41J 9/00

U.S. Cl. 400—427 **8 Claims**



1. A typewriter having an array of keys each including a shank slidable vertically in a respective bore formed in the body of the typewriter and a corresponding array of type bars each of which is operable by means of a tension element connecting the type bar to the shank of the corresponding key, at least a length of the tension element adjacent the key shank being flexible and being trained over an edge of the bore in which the shank slides so that depression of the key effects longitudinal movement of the tension element to operate the type bar, the shank of each key having an elongated side recess shaped to receive a bead formed on the end of the flexible length of the associated tension element, in which there are provided abutment means in the recess, said abutment means engaging the bead thereby to move the bead on depression of the key, the bead being of a shape and size such that said bead can move within the bore in which the shank slides whilst remaining engaged beneath the abutment means, the length of said bore being such that the bead remains within the bore during full depression of the key, and in which the recess has an opening through which, during assembly of the typewriter, the bead can be inserted into operative alignment in the recess before the shank is inserted into the bore whereby the bead is moved by the shank into its operative position within the bore, and means on said shank cooperating with the lower end of said bore to restrict upward movement of said shank after said bead has been moved to its operative position.

4,195,940

LINE CONTROL FOR PLATEN PRINTING DEVICES

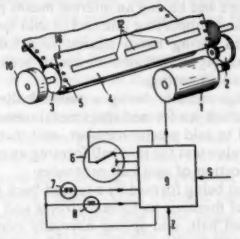
Rudolf Rekewitz, Weidach, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 13, 1977, Ser. No. 815,216

Claims priority, application Fed. Rep. of Germany, Jul. 26, 1976, 2633498

Int. Cl.² B41J 19/76

U.S. Cl. 400—568 **1 Claim**



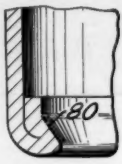
1. A character writing device having a rotatable paper feed member which is rotated for line advance movement of a paper received around the feed member by a motor coupled to the feed member, the motor being activated by a control to provide a preselected rotational degree advance of the feed member for each normal line advance command, the improvement of the control for the motor including fractional advance means for activating the motor to rotate the feed member by a fractional amount of a full line spacing in both a paper advance and a paper retract direction of a rotation of the paper feed member, the fractional advance means including writing device keyboard switch means including a first key effective to cause the control to rotate the paper feed member in a paper advance direction a fractional amount of the full line spacing upon activation of the first key and a second key effective to cause the control to rotate the paper feed member a fractional amount of the normal line advance distance in a paper retract direction upon activation of the second key, the fractional advance means being independent of the normal line advance command whereby the position of the paper feed member chosen by actuation of the first and second keys will form a base rotational position for further normal line advance, the motor being a DC motor, and the fractional advance means including a time circuit controlling delivery of current to the DC motor in response to actuation of the first and second keys for a predesignated time interval, the normal line advance command causing said control to activate the time circuit for a plurality of the time intervals.

4,195,941

MARKING PEN WRITING TIP

Sidney D. Barlow, Scarsdale, N.Y., assignor to Mark-Tex Corporation, Englewood, N.J.

Continuation-in-part of Ser. No. 772,070, Feb. 25, 1977, abandoned. This application Dec. 14, 1977, Ser. No. 860,159
Int. Cl.[2] B43K *1/08, 7/12*
U.S. Cl. 401—214 7 Claims



1. A marking pen comprising:

a casing forming a liquid reservoir and having viscous liquid therein, said liquid being in the viscosity range of 1200 to 10,000 centipoise,

a writing tip module connected to said reservoir to receive said viscous liquid from said reservoir and spread the liquid on a surface, said writing tip module including a ball, a spring which spring-loads said ball, and a holder which holds said ball and spring, characterized in that

said holder comprises a plastic member and a metal tip member, said plastic member being of a synthetic plastic resin and being a hollow cylindrical member having an internal bore and having an internal means protruding into said bore and supporting one end of said spring, the other end of said spring being against said ball, said plastic member having connection means to secure said plastic member to said casing,

said metal tip member being a metal hollow cylindrical member which is a formed sheet metal member and which is fastened to said plastic member, said metal tip member having a valve seat for said ball forming an orifice through which a portion of said ball protrudes;

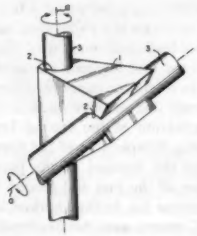
said valve seat being formed by a turned-back portion of said sheet metal member to form a strong and smooth valve seat for said ball; said spring normally compressing said ball against said valve seat to seal said marking pen, during operation of said pen said ball pushing against said spring to become unseated from said valve seat and permitting flow of said liquid through said orifice.

4,195,942

LATTICE CONSTRUCTION AND CONNECTING DEVICE THEREFOR

Mark O. Kestner, 7 Hampshire Dr., Mendham, N.J. 07945

Filed Jan. 25, 1978, Ser. No. 872,344
Int. Cl.[2] F16B *2/20*
U.S. Cl. 403—13 3 Claims



1. A device for connecting crossed rods, such device comprising:

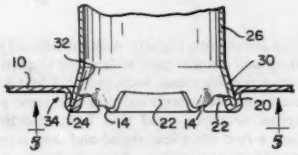
a body, of resilient material and having a predominantly tetrahedral shape, in which there have been formed two straight, open-ended channels, located along two non-adjacent edges of the body, in such a way that walls of each such channel are capable of gripping one of the rods each of said channels encompassing an arc of more than 180° and terminating in opposed edges defining the open end therof and with each edge of a respective channel also defining the edge of a beveled face extending from an opposite face of the tetrahedron and beveled inwardly toward the channel and the opposite beveled face.

4,195,943

TUBE-TO-PLATE CONNECTION

Ronald S. Williams, Columbus, Ind., assignor to Arvin Industries, Inc., Columbus, Ind.

Filed May 22, 1978, Ser. No. 908,393
Int. Cl.[2] B25G *3/00*
U.S. Cl. 403—242 11 Claims



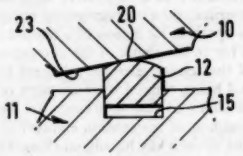
1. A tube-to-plate connection comprising means on a plate defining an aperture where a tube is to be attached to the plate, the region of the plate surrounding the aperture including a flange for receiving the end of the tube, the flange including a proximal end at its junction with the plate, a first portion extending away from the plane of the plate, a second lip portion extending generally radially toward the axis of the aperture, and a third portion extending toward the plane of the plate at the distal end of the flange, the tube including a side wall portion lying adjacent the flange, the flange including an opening which extends longitudinally of the aperture axis partly across the first portion, across the second portion and across the third portion, the tube side wall being deformed to project into the opening to prevent rotation of the tube with respect to the plate and longitudinal movement of the tube in the aperture, the tube end projecting into the aperture into contact with the lip portion of the flange.

4,195,944

FRICTIONAL COUPLINGS

Michael Cross, 52 Bloomfield Ave., Bath, Avon, England

Filed Oct. 14, 1977, Ser. No. 842,104
Claims priority, application United Kingdom, Oct. 16, 1976, 43077/76
Int. Cl.[2] F16B *21/18*
U.S. Cl. 403—326 14 Claims



1. A coupling assembly which comprises in combination a female member including an axially-extending bore, a male member for coupling therewith positioned axially within the bore in said female member but spaced therefrom at least partially by a clearance between inner surfaces of the bore in

the female member and outer surfaces of the male member which clearance is greater than that required for the male member to move within the female member, the male member being movable axially and except when coupled with the female member rotatable relative thereto, and a generally-annular band-shaped friction coupling member formed of a metal alloy, having inner and outer faces, embracing the male member and accommodated within said clearance but protruding therefrom, said friction coupling member being of substantially regular polygonal shape in the plane normal to the common axis of the female and male members and of quadrilateral cross-section, said coupling member outer face formed with a rounded profile in cross-section, the opposed outer surfaces of the male member and inner surfaces of the female member being so formed that the clearance between them varies as the male and female members are moved axially relative to each other between a non-threaded low-clearance location where the respective inner and outer faces of the friction coupling members are forced into frictional engagement with the opposed surfaces of both the male and female members, the external corners of the outer face of the polygonally-shaped friction coupling member then bearing upon the inner surfaces of the female member, so as thus frictionally to restrain restrain relative rotational movement between the male and female member and a high-clearance location where the friction coupling member is not in frictional engagement with at least one of said male and female members.

4,195,945

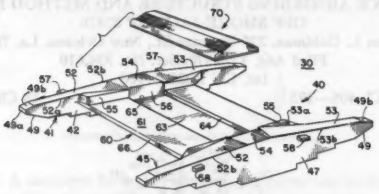
SNOWPLOWABLE PAVEMENT MARKER AND BASE MEMBER THEREFOR

Sidney A. Heenan, Park Ridge, Ill., assignor to Amerace Corporation, New York, N.Y.

Continuation of Ser. No. 789,249, Apr. 20, 1977, which is a continuation-in-part of Ser. No. 681,858, Apr. 30, 1976, abandoned. This application Nov. 24, 1978, Ser. No. 963,339

Int. Cl.[2] E01F *9/04*

U.S. Cl. 404—16 **33 Claims**



1. A base member for use as a component of a low-profile pavement marker for use in snow areas for establishing on a finished roadway surface a marking visible from an oncoming vehicle while protecting the marking from damage by oncoming snowplow blades during snowplowing operations, said base member having first and second laterally spaced-apart longitudinally extending ramp members each having a lower portion and an upper portion and an inclined surface extending between a lowermost end and an uppermost end to form an inclined ramp, the lower portion of said base member defining a longitudinally extending keel portion adapted to be recessed below the roadway surface with the upper portion of each said ramp member extending above the roadway surface, and said base member further having a support member interconnecting said ramp members and providing a downwardly facing bottom surface adapted to be disposed in a complementary recess in the associated pavement and a generally upwardly facing support surface adapted to carry signal means thereon, the signal means thus adapted to be disposed between and below said ramp members with an upper portion of the signal means disposed above the roadway surface, so that an oncoming snowplow blade will ride up said ramp members and be deflected thereby from contact with said signal means as the snowplow blade passes over said pavement marker, said ramps being so configured and arranged to provide adequate space therebetween to allow vehicle tires to wipe the signal means, and whereby said bottom surface by being recessed in use below the level of the associated roadway surface enables minimization of the total height of said base member above the roadway surface thereby to reduce the impact energy imparted to said base member and the pavement and to oncoming vehicles striking said base member.

4,195,946

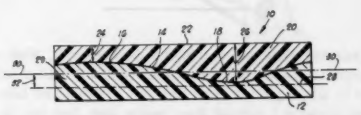
METHOD FOR RESURFACING A PAVED ROADWAY

George W. Swisher, Jr., Oklahoma City, Okla., assignor to CMI Corporation, Oklahoma City, Okla.

Continuation of Ser. No. 765,869, Feb. 4, 1977, abandoned. This application May 24, 1978, Ser. No. 909,228

Int. Cl.[2] E01C *23/00*

U.S. Cl. 404—75 **2 Claims**



1. A method for resurfacing an existing paved roadway to produce a new roadway surface having a predetermined grade and cross slope, wherein the existing paved roadway has at least one irregular depression therein extending below the predetermined grade, the method comprising the stpes of:

removing the material of the paved roadway within a predetermined distance of the depression to a predetermined depth below the bottom of the depression;

applying a substantially uniform layer of new pavement material within the depression, the layer having an upper surface above the predetermined grade and a density substantially the same as the density of the existing pavement material surrounding the depression; and,

passing a rotating planing cutter over the paved roadway at the predetermined grade and cross slope to remove the material of the paved roadway above the predetermined grade and cross slope.

4,195,947

BEARING ARRANGEMENT FOR ROLLER BODIES IN COMPACTING ROLLERS

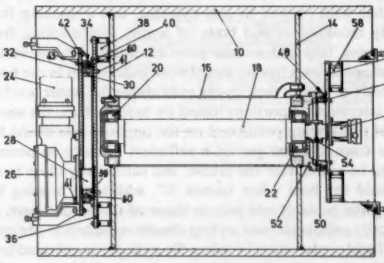
Hans-Reinhard Lambertz, Willbecker Str. 57, 4006 Erkrath 2, Fed. Rep. of Germany

Filed Mar. 3, 1978, Ser. No. 883,278

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1977, 2710708

Int. Cl.[2] E01C *19/38*

U.S. Cl. 404—117 **11 Claims**



1. A vibratory compacting roller comprising:

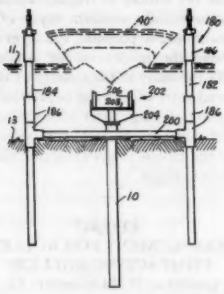
a vehicle frame;
a vertical contact plate connected to said frame;
a roller body, for rotation about a horizontal axis, and having a vertically extending end wall;
a cushion spider, spaced from said end wall;
rubber cushion means connecting said end wall and said cushion spider;
a first bearing ring having an axial end face engaging said contact plate;
a second bearing ring having an axial end face engaging said end wall; and
roller elements engaging said first and second bearing rings, whereby said first and second bearing rings and said roller elements form a roller bearing ring mount.

4,195,948

HYDRAULIC BOAT LIFT WITH REGULATING SYSTEM THEREFOR

Karl L. Vancil, 368 Angelo Ln., Cocoa Beach, Fla. 32931

Filed Aug. 25, 1978, Ser. No. 936,930
Int. Cl.[2] B63C *3/06*
U.S. Cl. 405—3 **13 Claims**



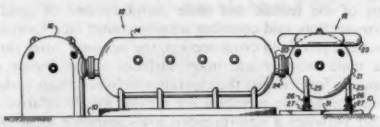
1. A boat lift and combined dry docking frame, comprising a generally vertical, pressure fluid lift cylinder having its lower end buried in the bed of a body of water, a piston in said cylinder and a ram secured to the piston and extending through the upper end of the cylinder, a boat cradle secured to the upper end of said ram, said cradle, ram and piston being rotatable together with respect to said cylinder, and a docking frame fixedly mounted in said body of water, said docking frame comprising first and second pairs of closely spaced vertical boat support posts having their lower ends buried in the bed of said body of water, their upper ends above the water level and their intermediate portions joined by bracing bars, the second pair of posts being positioned on the opposite side of the boat cradle from the first pair at a sufficient distance to permit a boat to be sailed over the cradle, and sufficiently close to seat and hold the boat when turned 90°, additional bracing bars joining the posts of one pair to those of the second pair, and vertically adjustable boat seating chocks mounted on the upper end of said posts, whereby when the cylinder is operated to lift a boat on the cradle above the support posts, the boat may then be turned 90° and lowered onto the posts.

4,195,949

METHOD AND APPARATUS FOR EMERGENCY TRANSFER AND LIFE SUPPORT OF SATURATION DIVERS

Max A. W. Reiher, Mandeville, La., assignor to J. Ray McDermott & Co., Inc., New Orleans, La.

Filed Jul. 17, 1978, Ser. No. 925,551
Int. Cl.[2] B63C *11/00*
U.S. Cl. 405—185 **5 Claims**



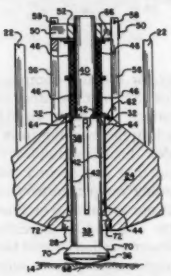
1. A Life support system for saturation divers, which comprises:
a decompression chamber adapted to be mounted on the deck of a support vessel floating on the surface of a body of water for housing a diver in a pressurized atmosphere of a predetermined pressure;
a diving bell adapted for attachment to the decompression chamber and for transporting a diver from the surface support vessel to underwater work location and back to the surface support vessel; and
a hyperbaric life boat capsule adapted to be supported on the deck of the surface support vessel adjacent the decompression chamber for connection thereto by connecting means that sealingly couples the capsule to the decompression chamber and provides for detachment of the capsule, the capsule being adapted for launching from the surface support vessel to float freely and independently therefrom at the water surface.

4,195,950

SHOCK ABSORBING STRUCTURE AND METHOD FOR OFF SHORE JACK-UP RIGS

Jerome L. Goldman, 225 Baronne St., New Orleans, La. 70130

Filed Aug. 17, 1978, Ser. No. 934,610
Int. Cl.[2] E02B *17/08*
U.S. Cl. 405—195 **18 Claims**



1. A shock absorbing structure for use on the bottom of at least one support leg of an off-shore rig, which is supported above the water surface by at least one vertically movable leg, comprising:
(a) bottom member means fixedly attached to the bottom portion of the leg of the rig for load supporting of the upper portion of the rig when the rig is set and held up in position from the water bottom;
(1) said bottom member means having formed in a portion thereof an opening;
(b) an elongated vertically movable piston member posi-

tioned within said opening and having a lower, and intermediate and an upper end portion,

(1) said lower end portion always resiliently extending below the lowermost portion of said bottom member means when said bottom member means is out of contact with the water bottom;

(c) at least one compression member means associated with said piston member, for absorbing shock during a shock absorbing condition when the leg is initially lowered into contact with the water bottom, said piston member being the first substantial structure to resiliently contact the water bottom; and

(d) retaining means, associated with said upper end portion, for retaining and limiting the movement of said upper end portion,

(1) said retaining means being fixedly attached to said bottom member means, said compression member means and said retaining means allowing said piston member to vertically move upwardly with resilient resistance under the action of the water bottom contact allowing said bottom member means to ultimately contact the water bottom and carry the load.

4,195,951

CONTAINER FOR THE OFFSHORE STORAGE OF LIQUIDS

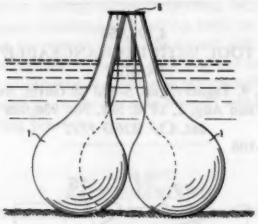
Ulrich Finsterwalder, Munich, Fed. Rep. of Germany, assignor to Dyckerhoff & Widmann Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Mar. 21, 1978, Ser. No. 888,618

Claims priority, application Fed. Rep. of Germany, Mar. 29, 1977, 2713756

Int. Cl.[2] E02B *17/00*; E02D *27/38*

U.S. Cl. 405—210 **12 Claims**



10. A container formed of reinforced concrete can be floated into position at an offshore location and sunk onto the ocean floor, the container can be used for the storage of liquid, such as crude oil, wherein the improvement comprises that the container has an upwardly extending longitudinal axis, a bottom, and a lateral portion extending upwardly from the botton, said container includes a lower hollow container section forming the bottom and a part of the lateral portion of the container and an upper hollow container section having a smaller diameter than said lower section and forming another part of the lateral portion of the container, said lower section including the bottom and lateral portion thereof formed as a body of rotation having a curved generatrix with a variable diameter about the longitudinal axis of the container and a curved bottom, said upper section connected to and extending upwardly from the upper end of said lower section and the diameter of said upper section decreasing in the upward direction from its connection to said lower section, the maximum diameter of said upper section being less than the maximum diameter of said lower section, and said curved bottom of said lower section permitting the support for the container when the longitudinal axis of the container is disposed at an angle to the vertical, a plurality of the containers are arranged in a group and are located with the longitudinal axes thereof disposed in inclined positions from the vertical and with the upper ends of the upper sections thereof disposed in contacting relationship, and a common platform interconnecting the upper ends of the upper sections of said containers.

4,195,952

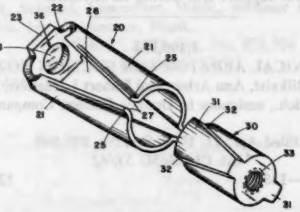
MEANS FOR ANCHORING TO ROCK

Roger I. Swanson, 114 Glenwood Way, Butler, Pa. 16001

Filed Mar. 27, 1978, Ser. No. 890,234

Int. Cl.[2] F16B *13/10*; E21D *20/00, 21/00*

U.S. Cl. 405—259 **11 Claims**



1. In means for securing a bolt in a generally circular hole formed in a rigid material such a rock, said means comprising: a shell and an expander nut, said shell having a pair of wings joined at one end, said wings each having a primary central body portion of outwardly arched cross-sectional shape and a generally smooth exterior surface, a pair of flanges, one on each side, extending generally diametrically outwardly from each of said wings; the surfaces of said flanges being opposed and forming cam surfaces converging away from said joined end, said expander nut having wedge surfaces complimentary to and seated against said cam surfaces for urging said wings apart when said expander nut is moved away from said joined end; the walls of said nut being spaced from the interior surfaces of said wings between said flanges; the edges of said flanges and the crown of said central body portion of each wing forming a toggle of increasing reactive force as said expander nut is moved away from said joined end.

4,195,953

ADVANCE MECHANISM FOR A MINE ROOF SUPPORT ASSEMBLY

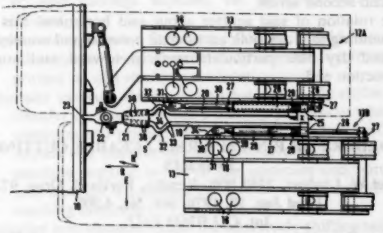
Kunibert Becker, Werl; Willy Heyer, Bochum-Gerthe; Lubomir Plevak, Lunen, and Jürgen Dodt, Menden, all of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany

Filed Dec. 29, 1978, Ser. No. 974,462

Claims priority, application Fed. Rep. of Germany, Dec. 29, 1977, 2758661; Dec. 29, 1977, 2758663

Int. Cl.[2] E21D *15/44*

U.S. Cl. 405—300 **17 Claims**



1. An advance mechanism for a roof support assembly constituted by a plurality of roof support units positioned side-by-side along, for example, a longwall face of a mineral mining working, the advance mechanism comprising hydraulic advance ram means and a pair of resilient, generally parallel

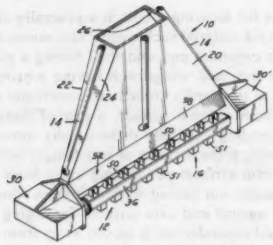
guide rods, the guide rods being interconnected at one end by means of a head-piece which is attachable to a conveyor extending along the longwall face, the other end of each guide rod being attached to a respective slide piece which is slidably guided on a respective guide rail which is attached to a floor girder of a roof support unit, the hydraulic advance ram means being pivotally attached to the guide rods and to said floor girders, wherein the guide rods are provided, adjacent said one end, with outwardly projecting alignment members each of which co-operates with one of said floor girders to align an associated roof support unit during its advance.

4,195,954

MECHANICAL AERATOR FOR SUCTION NOZZLE

Ib Bentzen-Bilkvist, Ann Arbor, and Robert L. Hallett, Dundee, both of Mich., assignors to Dundee Cement Company, Dundee, Mich.

Filed Apr. 21, 1978, Ser. No. 898,849
Int. Cl.[2] B65G *53/42*
U.S. Cl. 406—135 **12 Claims**



1. In a nozzle assembly for unloading dry bulk particulate material from a vessel, barge, ship or the like, including a nozzle having a suction end into which the dry bulk particulate material is introduced, the improvement comprising:

a mechanical aerator mounted to said nozzle assembly adjacent said nozzle suction end;

said aerator rotatably mounted about a horizontal axis;

said aerator including an elongated shaft and paddle means secured to said shaft;

said paddle means for breaking up lumps in said dry bulk particulate material and for cleaning said dry bulk particulate material from the floor of said vessel and conveying the same toward said nozzle suction end;

said paddle means comprising a first series of spaced apart U or V-shaped channel members secured to one side of said shaft and a second series of U or V-shaped channel members secured to the other side of said shaft, the U or V-shaped channel members in said first series being offset laterally relative to the U or V-shaped channel members in said second series;

the rotation of said aerator about said horizontal axis for aerating said dry bulk particulate material and conveying said dry bulk particulate material toward said nozzle suction end.

4,195,955

HOLDER FOR PIN-TYPE REPLACEABLE CUTTING INSERTS

Harold W. Lindsay, 2480 NW. Vaughn, Portland, Oreg. 97210

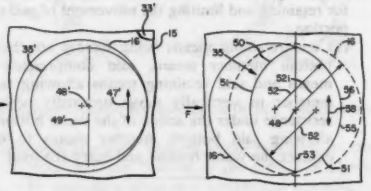
Filed Jan. 19, 1976, Ser. No. 4,909
Int. Cl.[2] B26D *1/12*
U.S. Cl. 407—40 **3 Claims**

2. In a cutter body having a recess extending inwardly of the periphery thereof for receiving an insert holder, a pin-type replaceable cutting insert having a circular aperture for receiving a cylindrical pin extending from a face of the insert holder to achieve a supporting relationship adjacent said face, the recess providing a supporting surface for at least one side of the insert, and screw means for clamping the insert holder and the insert into the recess,

the improvement comprising:

an insert holder having a face for supporting a pin-type replaceable cutting insert having a circular aperture centrally disposed therein; and

a pin extending perpendicularly to the face of the insert holder, the pin being cylindrical and comprising a pair of discrete opposed axially-extending portions, each of the portions comprising a segment of a circular cylinder having a periphery less than a 180°, the radius of each of the



portions being equal to the radius of the aperture in the cutting insert, the portions meeting in a plane normal to the face of the insert holder, the plane being disposed perpendicularly to the axis of the screw means,

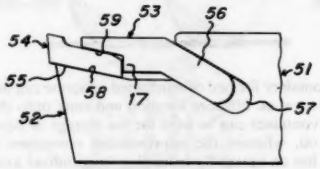
whereby the clamping force exerted by the screw means forces the insert to seat itself on the lateral surface of the one axially extending portion of the pin inwardly disposed in the recess, thereby to achieve positive seating of the insert on the pin in a direction perpendicular to the pin and parallel to the plane between the axially extending portions thereof.

4,195,956

SLOTTING TOOL WITH EXCHANGEABLE CUTTING INSERT

Wlajko Mihic, 9, Tegnervägen, S-802 28 Gavle, Sweden

Filed Aug. 1, 1978, Ser. No. 930,088
Int. Cl.[2] B26D *1/12*
U.S. Cl. 407—108 **7 Claims**



1. A cutting tool comprising

an exchangeable cutting insert,

a holder to hold said cutting insert and having a recess therein,

two narrow jaws clamping said cutting insert therebetween them,

a first one of said jaws defining a cutting seat and formed integrally with said holder,

a second one of said jaws positioned at least partially on the opposite side of said insert from said first jaw and being a loose separate member adapted to be inserted in said recess in said holder back to a position within the outwardly extended length of said cutting seat and locked against lateral displacement,

said loose jaw having a portion guided in said recess in said holder to move said loose jaw toward said first jaw as said loose jaw moves inward in said recess,

said loose jaw having a shoulder means for entraining with said cutting insert when said cutting insert is driven be-

tween said jaws to provide the tightening effect required for retaining said loose jaw.

4,195,957

BORING TOOL WITH FLOATING DOUBLE EDGED KNIFE

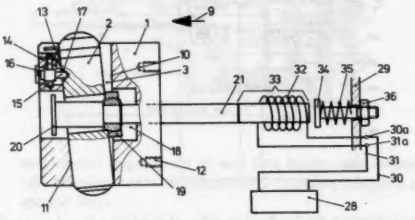
Helmut Wittkopp; Garrj Berstein, both of Erkelenz; Lothar Heymanns, Rheydt-Odenkirchen, and Willi Hansen, Erkelenz, all of Fed. Rep. of Germany, assignors to Wilhelm Hegenscheidt Gesellschaft mit beschraenkter Haftung, Erkelenz, Fed. Rep. of Germany

Filed Jun. 16, 1978, Ser. No. 916,245

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1977, 2728258

Int. Cl.² B23B *47/18*

U.S. Cl. 408—148 **18 Claims**



1. In a boring tool, a combination comprising a tool head having an axis and being turnable about said axis; means mounting said tool head movable in the direction of said axis along a working stroke and a return stroke; a cutting knife having opposite cutting edges projecting beyond said tool head; and means mounting said cutting knife on said tool head for oscillating movement transverse to said axis and for tilting movement in a plane including said axis between a working position and a withdrawal position in which said cutting edges project through a smaller distance beyond said tool head than in said working position.

4,195,958

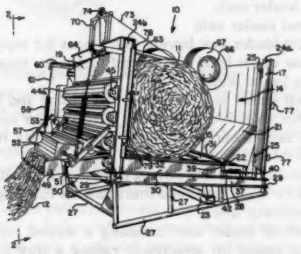
BALE UNROLLER

Vernon F. Vahlkamp, R.R. 2, and Wayne Diekemper, 1111 Montgomery, both of Carlyle, Ill. 62231

Filed May 30, 1978, Ser. No. 910,474

Int. Cl.² B65H *75/40*

U.S. Cl. 414—24.6 **20 Claims**



1. A bale unroller for unrolling a generally cylindrical bale of hay for removal of a continuous sheet of hay therefrom, said bale unroller comprising:

supporting means for supporting said bale in said hale unroller;

movable means disposed along said supporting means for engaging said bale to impart rotative movement to said bale for unrolling a sheet of hay therefrom;

roller means disposed above said supporting means for engaging against said bale and for containing said bale in said bale unroller during rotative movement of the bale; and

gravity and rotative means for urging said bale toward said roller means.

4,195,959

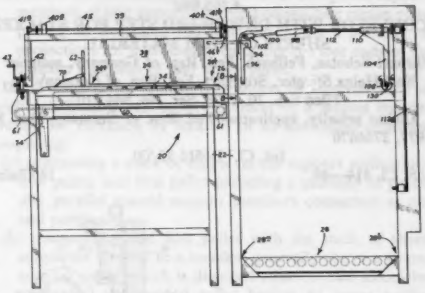
ARTICLE STACKING APPARATUS

Robert A. Schmitt, Vancouver, Wash., assignor to Columbia Machine, Inc., Vancouver, Wash.

Filed Feb. 17, 1978, Ser. No. 878,704

Int. Cl.² B65G *57/10*

U.S. Cl. 414—35 **6 Claims**



1. Apparatus for stacking articles comprising

a frame,

a layer-arranging table mounted on said frame, the upper surface of said table being formed by a plurality of laterally spaced article support members having portions defining upstream and downstream end portions of the table,

a transfer carriage mounted for shifting horizontally on said frame, the upper surface of said carriage being formed by a plurality of laterally spaced, elongate transfer members interspersed between said articles support members, opposite end portions of said transfer members defining upstream and downstream end portions of said carriage, with the upper surface of said carriage lying below the plane of the upper surface of said article support members,

a stacking platform mounted for vertical shifting on said frame from a position immediately below the plane of said transfer carriage to selected positions there below, said platform having an upstream end portion adjacent the downstream end portion of said layer-arranging table and an opposite downstream end portion,

a plurality of extendable-retractable pusher arms mounted on said carriage adjacent the upstream end portion thereof,

rake means mounted for vertical shifting on said frame, said rake means being mounted adjacent the upstream end portion of said stacking platform,

transfer carriage shifting means for selectively shifting said transfer carriage between a loading position in which the upstream end portion of said carriage is adjacent the upstream end portion of said layer-arranging table, and a stacking position in which the upstream end portion of said carriage is adjacent the upstream end portion of said stacking platform,

pusher arm elevator means for selectively shifting said arms between extended positions in which the arms extend substantially above the plane of the layer-arranging table and retracted positions in which the arms lie below the plane of the upper surface of the layer-arranging table,

rake positioning means for selectively shifting said rake means between a receiving position in which the rake

means is spaced substantially above the plane of said carriage and a raking position in which said rake means is located vertically adjacent the upper surface of said carriage, and

fence means mounted on said frame for selective upstream/downstream shifting above said stacking platform for aligning downstream edges of articles when such articles are transferred on said transfer carriage to a position above said stacking platform, said fence means comprising a fence plate having a lower edge spaced above the plane of the upper surface of the transfer carriage and an edge member mounted adjacent the lower edge of said fence plate for upward swinging movement when said edge plate is contacted by said transfer carriage as the transfer carriage is shifted in a downstream direction thereunder.

4,195,960

CONVEYOR WITH DOWNWARD STEP FOR STACKED SHEETS OF FILM MATERIAL

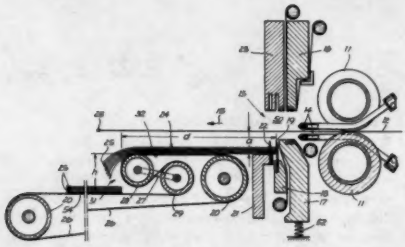
Ehrhart Schulze, Fellbach, Fed. Rep. of Germany, assignor to Karl-Heinz Stiegler, Stuttgart, Fed. Rep. of Germany

Filed Sep. 20, 1978, Ser. No. 944,010

Claims priority, application Fed. Rep. of Germany, Oct. 18, 1977, 2746670

Int. Cl.[2] B65H *35/00*

U.S. Cl. 414—49 **14 Claims**



1. Apparatus for stacking and transporting sheet material comprising:

(a) a conveyor belt;

(b) a stacking place for stacking said sheet material at least partly on said conveyor belt;

(c) at least one downward step at the end of said stacking place;

(d) moving means for moving said conveyor belt a conveyor increment at least as far as the distance from said the trailing end of a stack of sheet material on said stacking place to the edge of said step whereby said trailing end is moved over said step; and

(e) the height of said step exceeding the height of said stack.

4,195,961

APPARATUS FOR LOADING AND UNLOADING A WORK SPINDLE OF A MACHINE TOOL

Paul Waiblinger, Esslingen, Fed. Rep. of Germany, assignor to Index-Werke KG Hagn & Tessky, Esslingen, Fed. Rep. of Germany

Filed Mar. 3, 1978, Ser. No. 883,141

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1977, 2710661

Int. Cl.[2] B65G *59/02*

U.S. Cl. 414—120 **6 Claims**

1. Apparatus for loading a machine tool having a horizontal work spindle, said apparatus comprising:

a shaft,

means mounting said shaft for rotary movement around its longitudinal axis and with its longitudinal axis parallel to the horizontal work spindle,

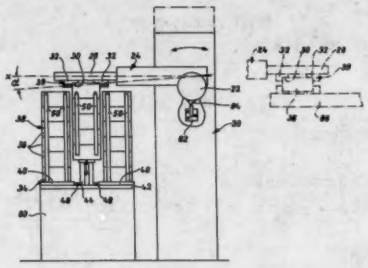
a workpiece storage with at least one vertical stack for workpieces,

a swing arm extending perpendicularly from said shaft,

means mounting said swing arm on said shaft for displacement along the shaft axis and for pivotal movement about the shaft axis between a position adjacent to said workpiece storage and a position adjacent said tool,

a lifting device for lifting at least said one stack of workpieces,

means including at least one gripper on the swing arm adapted to be actuated to grip a workpiece which lies on the top of one stack of workpiece and which is to be loaded into the tool,



an actuating device for actuating the gripper to grip a workpiece, said actuating device being inactive in an initial position of said arm in which said arm is inclined downwardly at an acute angle to the horizontal and rests on said one stack of workpieces.

means responsive to movement of said lifting device for moving said arm from said initial position to a gripping position at which said arm is horizontal, and

means responsive to movement of said arm from said initial position to said gripping position for activating said actuating means to cause said gripper to grip said top workpiece.

4,195,962

PLATFORM LOADING SYSTEM

Gordon J. Laskowski, Port Orchard, and Richard I. Schrick, Bremerton, both of Wash., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 29, 1976, Ser. No. 653,419

Int. Cl.[2] B65G *1/10*

U.S. Cl. 414—659 **9 Claims**

1. A cargo handling system comprising:

(a) a first loader unit;

(b) a second loader unit;

(c) said first loader unit having first means for supporting a tray at an upper level and second means for supporting a tray at a lower level;

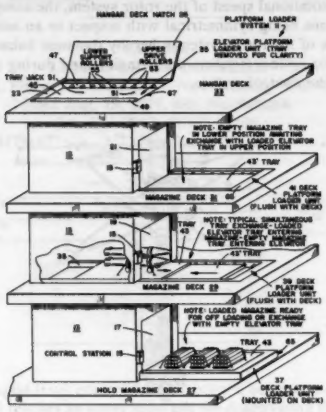
(d) said first loader unit including first raising and lowering means for selectively lowering a tray from said upper level to said lower level or for raising a tray from said lower level to said upper level;

(e) said second loader unit having third means for supporting a tray at an upper level and fourth means for supporting a tray at a lower level;

(f) said second loader unit including a second raising and lowering means for selectively raising a tray from said lower level to said upper level or for lowering a tray from said upper level to said lower level;

(g) transfer means for selectively transferring a first tray from said upper level of said first loader unit to said upper level of said second loader unit and transferring a second tray from said lower level of said second loader unit to said lower level of said first loader unit or transferring a

first tray from said lower level of said first loader unit to said lower level of said second loader unit and transferring a second tray from said upper level of said second loader



unit to said upper level of said first loader unit whereby said transfer means simultaneously transfers said first and second trays.

4,195,963

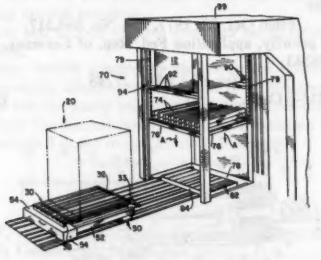
LOADING PLATFORM AND METHOD FOR TRANSFERRING SHEETS OF MATERIAL

Henry S. Levkoff, Old Westbury, and Alphonse Falco, Rosedale, both of N.Y., assignors to Standard Folding Cartons, Inc., Jackson Heights, N.Y.

Filed May 23, 1978, Ser. No. 908,682

Int. Cl.[2] B65G *61/00*

U.S. Cl. 414—786 **11 Claims**



1. A loading platform which comprises:

(a) a movable base pallet having a fork configuration including a forward portion and a rearward portion, said rearward portion including a plurality of generally parallel elongated supports projecting in spaced relation transversely of said forward portion, adjacent pairs of said supports defining an elongated passage therebetween;

(b) an upper pallet removably supportable on said base pallet having a fork configuration including an elongated first portion and a second portion including a plurality of generally parallel elongated spaced support members projecting from said first portion, said plurality of support members defining a surface adapted to support a load thereon and arranged for alignment with said support members of said base pallet;

(c) means for aligning said upper pallet in superposed relation atop said base pallet such that each of the support members is supported lengthwise above one of said supports of said base pallet, said aligning means comprises:

(1) a plurality of plugs having at least a portion defining a generally conical configuration mounted in spaced locations in upright relation of said movable base pallet, and

(2) a plurality of socket members facing downwardly from said upper pallet, each of said socket members defining a conical recess configured and dimensioned to matingly engage one of said conical plugs, said socket member arranged to correspond to the locations of said plugs so as to permit said upper pallet to rest upon said base pallet in aligned relation;

(d) a plurality of spaced apart legs projecting downwardly from the support members of the upper pallet generally parallel to said socket members of said upper pallet; and

(e) means for connecting the free ends of the spaced support members of said upper pallet, said connecting means comprising an elongated rod member having a plurality of projections for individually engaging the free ends of the support members of said upper pallet.

10. A method for transferring sheets of material such as cardboard from a first supply position to a second transfer position for elevation by forklifts of an associated apparatus comprising:

(a) positioning a stack of sheets on the support surface of a first pallet, said first pallet including a plurality of generally parallel spaced support members connected at one end portion;

(b) transporting said first pallet with the stack of sheets supported thereon to a location generally above a second support pallet which is disposed adjacent said associated apparatus, said second pallet having an upper surface portion adapted to support said first pallet, said second pallet including a plurality of generally parallel spaced support members connected at one end;

(c) lowering said first pallet in superposed aligned relation on said second pallet so that each of said spaced support members of said first pallet is supported lengthwise on one of said spaced support members of said second pallet; and

(d) moving said stack of sheets supported on said first pallet and said second pallet to said transfer position.

4,195,964

ARRANGEMENT FOR REDUCING GAP LOSSES IN THE ADJUSTABLE GUIDE VANES OF FLUID FLOW MACHINES, PARTICULARLY GAS TURBINE ENGINES

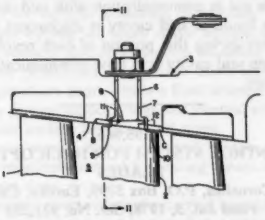
Eckhard Kraft, Munich, and Volker Lunneman, Bachern, both of Fed. Rep. of Germany, assignors to Motoren- und Turbinen-Union München GmbH, Munich, Fed. Rep. of Germany

Filed Aug. 14, 1978, Ser. No. 933,191

Claims priority, application Fed. Rep. of Germany, Sep. 7, 1977, 2740192

Int. Cl.[2] F01D *11/00, 17/12*

U.S. Cl. 415—160 **3 Claims**



1. In an arrangement for reducing the gap formed by the adjustable axial-flow guide vanes of fluid flow engines, such as gas turbine engines, between the rootsided lower edges of the vane airfoil and the thereto contiguous outer wall of an annular

flow passageway; the improvement comprising grooves formed in the outer wall of said flow passageway above a leading and/or trailing lower edge of the vane airfoil; a soft vane base-covering coating filling said grooves; and recesses being formed in said coating-filled grooves slightly above the pivot plane of the respective lower vane edges.

4,195,965

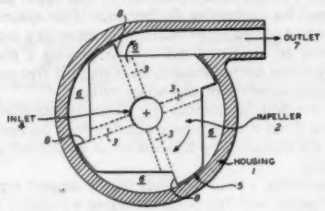
RAM PUMP FLOWMETER

Walter Masnik, 9 Penbroke Dr., Mendham, N.J. 07945

Division of Ser. No. 778,930, Mar. 18, 1977, Pat. No. 4,123,941. This application Jun. 12, 1978, Ser. No. 914,962

Int. Cl.[2] F01D *1/32*

U.S. Cl. 415—213 R **1 Claim**



1. A centrifugal liquid pump having a substantially constant volume liquid flow characteristic in the lower portion of the pump operating pressure range comprising a rotatable impeller, a casing surrounding and enclosing said impeller having a single discharge port therein for receiving liquid pumped by said impeller, said impeller being in the form of a disc having cut-away portions spaced circumferentially around its periphery forming a plurality of circumferentially spaced cavities separated by lobes between said cavities, said lobes having outer circumferentially curved surfaces forming a close fit with the circumferentially curved inner wall surface of said casing to form circumferentially extending seals between said cavities, thereby preventing escape of liquid in each cavity except through said discharge port during the time when the respective cavity is in flow communication with said discharge port, each said cavity being in flow communication with said discharge port in the pump casing during a portion only of each revolution of the impeller, and at least one radially extending flow passage in said impeller connecting the rear end of each said cavity, with respect to the direction of rotation of said impeller, to a liquid inlet located adjacent the axis of rotation of said impeller, the arrangement of said radially extending flow passages, said cavities, and said discharge port being such that each said cavity is filled with liquid forced outwardly through a radial flow passage by centrifugal force exerted on the liquid as a result of rotation of said impeller during that portion of each revolution of the impeller when said cavity is not in communication with said discharge port, and that the liquid in said cavity is discharged through said discharge port during that portion of each revolution of said impeller when said cavity is in flow communication with said discharge port.

4,195,966

PITCH CONTROL SYSTEM FOR HELICOPTER ROTOR BLADES

George W. Cornelius, P.O. Box 5099, Eureka, Calif. 95501

Filed Jul. 3, 1978, Ser. No. 921,255

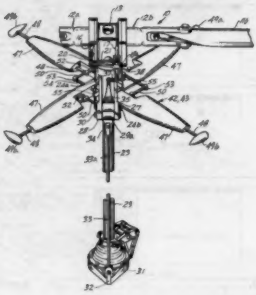
Int. Cl.[2] B64C *27/72*

U.S. Cl. 416—18 **16 Claims**

1. In a rotorcraft having a rotor system with a blade which is mounted to be movable in pitch attitude, a pitch control system for the blade comprising:

lift-sensing means for sensing the lift generated by the blade, and for providing a first output related to lift;

compensating means for generating a second output related to rotational speed of the rotor system, the compensating means being symmetrical with respect to an axis of rotation of the rotor system whereby dynamic balance of the rotor system is substantially maintained during operation of the control system;



collector means connected to the lifting-sensing means and compensating means for comparing the first and second outputs, and for adjustably balancing the outputs by changing the pitch attitude of the blade; and

pilot-controlled means connected to the collector means for varying the relationship of the first and second outputs which results in a balanced condition of the outputs.

4,195,967

ROTOR FREE OF FLAPPING HINGES AND FREE OF LEAD-LAG HINGES

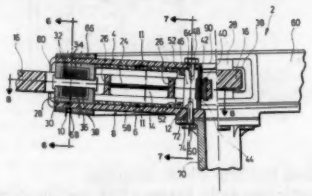
Emil Weiland, Hohenbrunn, Fed. Rep. of Germany, assignor to Messerschmitt-Boelkow-Blohm GmbH, Munich, Fed. Rep. of Germany

Filed Oct. 21, 1977, Ser. No. 844,317

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1976, 2648343

Int. Cl.[2] B64C *27/48*

U.S. Cl. 416—134 A **15 Claims**



1. A rotor free of flapping hinges and free of lead-lag hinges for rotary wing aircraft, comprising rotor blades, carrier bar means operatively interconnecting said rotor blades, substantially rigid rotor hub means and radially outer blade angle bearing means **(10)** as well as radially inner blade angle bearing means **(12)** operatively connecting said carrier bar means to said substantially rigid rotor hub means, tension resistant connecting means operatively arranged between the carrier bar means for compensating centrifugal forces effective on the carrier bar means, said substantially rigid rotor hub means comprising upper disc shaped support plate means **(4)** and lower disc shaped support plate means **(6)** made of fiber compound materials wherein the fibers extend substantially radially relative to the rotational axis of the rotor, and shear resistant strut means **(46, 58, 60)** arranged to operatively space said

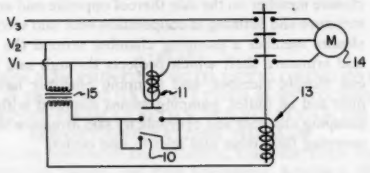
upper and lower disc shaped support plate means (4, 6) from each other, said radially outer and inner blade angle bearing means (10, 12) being supported between said disc shaped support plate means (4,6).

4,195,968

LIQUID LEVEL CONTROL

George B. Emeny, 83 Hilltop Pl., New London, N.H. 03257

Filed Aug. 19, 1977, Ser. No. 825,866
Int. Cl.[2] F04B *49/02, 49/06*
U.S. Cl. 417—17 2 Claims



1. A liquid level control for activating a pump motor when the liquid reaches an upper level and for deactivating the pump motor when the liquid reaches a lower level comprising:

at least one relay switch in the electrical power supply conduits leading to the pump motor for supplying current to the pump motor,

a relay pull-in coil power supply circuit in parallel with said pump motor,

means responsive to the liquid level for controlling a first control switch in said relay coil power supply circuit such that the switch closes when the upper liquid level is reached and remains closed until the liquid level recedes somewhat below the upper liquid level,

means responsive to the pump motor current for controlling a second control switch in said relay coil power supply circuit such that the switch closes when the pump motor begins to draw current and remains closed until the current drawn by the pump falls below the current drawn during normal pumping,

said first and second control switches being connected in parallel,

said relay switch controlling the electrical power to said pump motor whereby the first control switch activates the relay and the pump motor at least for a time sufficient to activate the second control switch to maintain the relay closed until pump motor current decreases.

4,195,969

VACUUM CLEANER

Robert P. Whitney, Grand Haven, Mich., assignor to Clarke-Gravely Corporation, Muskegon, Mich.

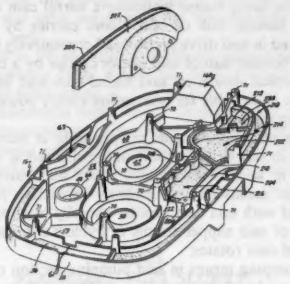
Filed Jan. 5, 1978, Ser. No. 867,348
Int. Cl.[2] F04B *39/00*; F04D *25/16, 29/66*
U.S. Cl. 417—247 29 Claims

1. A vacuum cleaning apparatus suction head adapted for use with a collection tank, said suction head comprising:

a base adapted for mounting on said collection tank, said base defining an intake aperture;

a suction unit mounted on said base, said unit including a suction intake in communication with said intake aperture and an exhaust outlet;

exhaust muffler means defined in part by said base for defining a sound chamber having an inlet and an atmospheric outlet for muffling exhaust noise, said exhaust muffler means including said base having a generally flat section and a plurality of sound chamber defining walls extending vertically from said base generally flat section, said walls defining a plurality of interconnected subchambers which collectively define said sound chamber and a baffle plate resting on said sound chamber defining walls, said baffle plate having an inlet aperture defining said sound chamber inlet, one of said walls having a notch to define said atmospheric outlet;



a plurality of sound absorbing elements positioned within said sound chamber; and

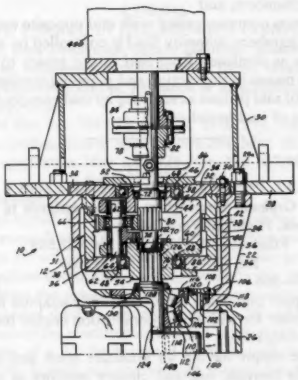
means for connecting said suction unit exhaust outlet with said sound chamber inlet.

4,195,970

PISTON PUMP WITH PLANETARY GEAR DRIVE

Albert A. Zalis, Warren, Mass., assignor to Houdaille Industries, Inc., Fort Lauderdale, Fla.

Continuation-in-part of Ser. No. 784,519, Apr. 4, 1977, abandoned. This application Oct. 20, 1977, Ser. No. 843,955
Int. Cl.[2] F04B *1/19, 39/14*
U.S. Cl. 417—269 14 Claims



1. A multi-piston pump for displacement of liquid and particularly adapted for vertical mounting, comprising:

a pump body having an upper drive section and a lower pumping section, said drive section including a gear train mechanism positioned above cam drive means, and including planetary gears within a fixed annulus having two vertically spaced support rings and internal sun gear teeth on an inner surface between said rings;

a planet gear carrier having top and bottom spaced hub portions rotatively carried by bearing means in said annulus support rings;

planetary pinion gears rotatively carried by said planet carrier between said top and bottom hub portions;

said planet pinion gears positioned to engage with said sun gear teeth;

an input shaft having an upper end adapted for attachment to a source of rotary power, said shaft journaled in shaft

bearing means carried by said planet carrier hub portions and having fixed center gear means positioned between said bearing means and drivingly meshing with said pinion gears;

said cam drive means including a barrel cam connected to said bottom hub of said planet carrier by a cam shaft carried in said drive section and corotatively connected to said bottom hub of said planet carrier by a cam shaft;

cam surface means on said barrel cam and having a sine-wave like profile for converting rotary power to reciprocating motion;

a series of slipper means reciprocable in elongated guide slots in said drive section and positioned at spaced intervals in said lower section about said barrel cam, said slipper means having inwardly projecting followers engaged with said cam profile whereby to effect reciprocation of said slipper means in cycloidal sequence as said barrel cam rotates;

fluid pumping means in said pumping section of said pump body and including a series of piston rods each having an upper end connected to said slipper means and a lower end extending into coupled engagement with upper ends of respective pistons operable in suction and pumping strokes carried in cylinders in said pumping section;

respective valve chambers in said pumping section adjacent to said cylinders and having opposite ends, and said chambers connected intermediate their ends by respective channels to suction and pumping ends of said pistons;

a respective valving assembly mounted in each of said valve chambers, each valving assembly including a one way suction valve device positioned between one side of the associated channel and one end of the chamber and a one way discharge valve device positioned between the opposite side of the associated channel and the opposite end of the chamber;

fluid intake means communicating with said one ends of said valve chambers; and

outlet means communicating with said opposite ends of said valve chambers; whereby fluid is controlled by said valve devices as displaced from said intake means to said discharge means in the suction and pumping strokes, respectively, of said pistons as actuated by said cam profile in the rotation of said barrel cam.

4,195,971

FUEL PUMP AND MOTOR ASSEMBLY

Kenneth A. Graham, Birmingham, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Aug. 8, 1977, Ser. No. 822,585

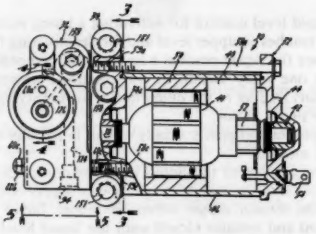
Int. Cl.[2] F04B *12/00, 39/00*

U.S. Cl. 417—366 **8 Claims**

1. A compact pump and motor assembly adapted for use as a fuel controller for an internal combustion engine fuel metering system comprising:

an electric motor having an armature shaft and armature structure thereon, one end closure member at one axial end of said motor, one axial end of said armature shaft being journaled on said one end closure member, a second end closure member at the opposite axial end of said motor, the opposite axial end of said armature shaft being journaled on said second end closure member but also projecting through said second end closure member on the side thereof opposite said armature structure, a casing extending axially between said two end closure members and defining therewith a chamber around said armature structure, said chamber adapted to function as a fuel vapor separation chamber when the assembly is in use as a fuel controller for an internal combustion engine fuel metering system;

a pump housing member disposed against said second end closure member on the side thereof opposite said armature structure and defining in cooperation with said second end closure member a pumping chamber around the end of said armature shaft which projects through said second end closure member, said pumping chamber having an inlet and an outlet, pumping means disposed within said pumping chamber and operable by said armature shaft for pumping fluid from said inlet to said outlet;



an inlet port, an outlet port and a return port in said pump housing member;

means forming a passage in said pump housing member and said second end closure member from said inlet port to said vapor separation chamber;

means forming a passage in said second end closure member from said vapor separation chamber to the inlet of said pumping chamber;

means forming a passage in said pump housing member from the outlet of said pumping chamber to said outlet port;

means forming a passage in said second end closure member and said pump housing member from said vapor separation chamber to said return port;

means forming a passage in said pump housing member from the outlet of said pumping chamber to said return port;

valve means disposed in said fourth-named passage for permitting fluid to pass therethrough under predetermined conditions in said vapor separation chamber;

and valve means disposed in said fifth-named passage for permitting fluid to pass therethrough under predetermined conditions at the outlet of said pumping chamber.

4,195,972

AQUEOUS-BASED HAIR DYEING COMPOSITION CONTAINING A SOLUBLE BISMUTH SALT AND A REDUCING COMPOUND

Herbert Lapidus, Ridgefield, Conn., assignor to Combe Incorporated, White Plains, N.Y.

Filed Oct. 20, 1978, Ser. No. 953,127
Int. Cl.[2] A61K 7/12
U.S. Cl. 8—10.1 11 Claims

1. In a hair dyeing composition comprising a metal salt and a sulfur-containing reducing compound in an aqueous vehicle, the improvement wherein said metal salt comprises a water-soluble bismuth salt of an alpha-hydroxy, mono-carboxylic acid.

4,195,973

PROCESS FOR PRINTING WITH DEVELOPING DYES WHICH EMPLOYS HAVING ETHER SUBSTITUENTS DERIVED FROM GLYCOLS, POLYGLYCOLS, OR ALKOXY DERIVATIVES THEREOF

Hasso Hertel, Muhlheim; Horst Curtius, Kelkheim; Erich Feess, Hofheim am Taunus, and Paul Karacsonyi, Kronberg, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 6, 1978, Ser. No. 958,134
Claims priority, application Fed. Rep. of Germany, Nov. 2, 1977, 2748931
Int. Cl.[2] C09B 27/00; D06P 1/12
U.S. Cl. 8—46 5 Claims

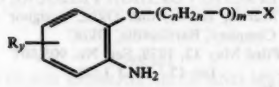
1. In a process for producing prints with developing dyes on cellulose-containing or fully cellulosic textile materials by printing the fabric with a printing paste containing

(a) an alkaline solution of a coupling component suitable for the printing with developing dyes,

(b) a dispersion of an amine suitable for the preparation of developing dyes,

(c) sodium nitrite, and

(d) a printing thickener, and developing the print with acidic agents, wherein the dyestuff formation is brought about by acidic steaming, or by applying a dilute aqueous solution of an organic acid having a minimum solubility in water of 30 g/100 g of water, a pK value of 4.0 to 2.5 at 20° C. and a boiling point above 175° C. at normal pressure, with subsequent steaming with neutral steam or rapid drying, the improvement which comprises using as amine a compound of the formula



in which X is hyrogen or alkyl of 1 to 4 carbon atoms, n is 2 to 6 and m stands for 1 to 4, R being hydrogen, halogen or nitro, y is 1 or 2 and the alkylene radical of the formula C_nH_{2n} being a straight or branched chain.

4,195,974

DESIZING AND BLEACHING OF TEXTILE GOODS

Wilfried Kothe, Ludwigshafen, and Wolfgang Grunwald, Frankenthal, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 3, 1978, Ser. No. 930,811
Claims priority, application Fed. Rep. of Germany, Aug. 9, 1977, 2735816
Int. Cl.[3] D01C 3/02; D06L 1/06
U.S. Cl. 8—138 9 Claims

1. A process for desizing and bleaching textile goods containing, or consisting of, cellulose and sized with starch, by enzymatic desizing and subsequent treatment with hydrogen peroxide, wherein the desizing bath contains, in addition to amylase in an amount to achieve desizing,

(a) from 0.1 to 10% of a dithionite

(b) from 0.2 to 10% of a heavy metal complexing agent selected from the group consisting of aminopolycarboxylic acids and salts, polyphosphates and phosphonic acids and salts, and

(c) from 0.05 to 5% of a buffer capable of maintaining the pH of the desizing bath, which has been brought to 6–9, within the same range,

the above percentages being based on the weight of textile goods, the salts mentioned above under (a) and (b) being other than heavy metal salts and wherein, during the subsequent peroxide bleaching, at most 5 ml of sodium or potassium silicate of 38° Be strength are employed per liter of bleaching liquor.

4,195,975

STABILIZED FUEL SLURRY

Yasumasa Hamuro, Kyoto; Akihiro Naka, Joyo, and Shuichi Honjo, Kyoto, all of Japan, assignors to Dai-Ich Kogyo Seiyaku Co., Ltd., Kyoto, Japan

Filed Apr. 17, 1978, Ser. No. 897,028
Int. Cl.[2] C10L 1/32
U.S. Cl. 44—51 17 Claims

1. A fuel slurry composition comprising a fuel oil, 20 to 60% of pulverized coal having an average particle size of 10 to 200 microns, an effective amount of a stabilizing agent selected from the group consisting of a condensate of a sulfonated benzene or naphthalene derivative with formaldehyde, a salt thereof, carboxymethylcellulose, a salt thereof, carboxymethylstarch and a salt thereof and 1 to 30% of water present in an amount sufficient to further stabilize the slurry, all % being by weight relative to the entire composition.

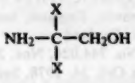
4,195,976

ADDITIVE USEFUL IN OLEAGINOUS COMPOSITIONS

Jack Ryer, East Brunswick; James Zielinski, Somerset; Harold N. Miller, Millington, and Stanley J. Brois, Westfield, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 708,925, Jul. 27, 1976, Pat. No. 4,102,798, which is a continuation of Ser. No. 455,250, Mar. 27, 1974. This application May 22, 1978, Ser. No. 907,948
Int. Cl.[2] C10L 1/22
U.S. Cl. 44—63 7 Claims

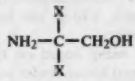
1. An oil stream in refinery operations which has been inhibited to prevent fouling of process equipment by incorporation of 0.001 to 2.0 wt. % of bis-oxazoline of a molar proportion of a hydrocarbon-substituted C_4–C_{10} dicarboxylic acid material selected from the group consisting of dicarboxylic acid, ester and anhydrides thereof, having more than 50 carbon atoms in said hydrocarbon substituent; reacted with about two molar proportions of a 2,2-disubstituted-2-amino-1-alkanol having 2 to 3 hydroxy groups and containing a total of 4 to 8 carbons of the formula:



wherein X is alkyl or hydroxy alkyl, said alkyl groups having 1 to 3 carbon atoms, and at least one of said X is a hydroxy alkyl group of the structure $—(CH_2)_nOH$ where n is 1 to 3; at a temperature in the range of about 140° to 240° C. for about ½ to 24 hours with the removal of about three molar proportions of water.

5. A normally liquid petroleum distillate fuel composition comprising: a major amount of petroleum fuel and 0.001 to 0.5 wt. % of bis-oxazoline of a molar proportion of a hydrocarbon-substituted C_4–C_{10} dicarboxylic acid material selected from the

group consisting of dicarboxylic acid, ester and anhydrides thereof, having more than 50 carbon atoms in said hydrocarbon substituent; reacted with about two molar proportions of a 2,2-disubstituted-2-amino-1-alkanol having 2 to 3 hydroxy groups and containing a total of 4 to 8 carbons of the formula:



wherein X is alkyl or hydroxy alkyl, said alkyl groups having 1 to 3 carbon atoms, and at least one of said X is a hydroxy alkyl group of the structure $-(CH_2)_nOH$ where n is 1 to 3; at a temperature in the range of about 140° to 240° C. for about ½ to 24 hours with the removal of about three molar proportions of water.

4,195,977

ETHER DIAMINE SALTS OF N-ACYLSARCOSINES AND THEIR USE AS CORROSION INHIBITORS

Thomas C. Newman, Hinsdale, Ill., assignor to Akzona Incorporated, Asheville, N.C.

Filed Sep. 22, 1978, Ser. No. 944,670
Int. Cl.² C10L *1/22*
U.S. Cl. 44—71 **28 Claims**

1. An ether diamine salt of an N-acylsarcosine, having the formula

$$[R_1O(CH_2)_3NH(CH_2)_3NH_2][HO_2CCH_2(CH_3)NOCR_2]$$

wherein R_1 is an aliphatic group containing from about 6 to about 18 carbon atoms and R_2 is an aliphatic group containing from about 8 to about 18 carbon atoms.

13. A corrosion inhibited normally liquid hydrocarbon comprising said hydrocarbon and an effective amount of a corrosion inhibiting composition comprising a mixture of one or more ether diamines and salts thereof with at least one N-acylsarcosine wherein the ether diamine is selected from the group consisting of ether diamines of the formula

$$R_1O(CH_2)_3NH(CH_2)_3NH_2$$

wherein R_1 is an aliphatic group containing from about 6 to about 18 carbon atoms and the N-acylsarcosine is selected from the group consisting of N-acylsarcosines having the formula

$$HOOCCH_2(CH_3)NOCR_2$$

wherein R_2 is an aliphatic group containing from about 8 to about 18 carbon atoms, and wherein from about 10 percent to about 100 percent of the ether diamine is present in the form of the sarcosinate salt.

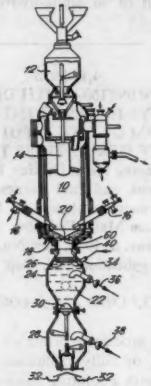
4,195,978

COAL GASIFICATION PLANT

John A. Anderson, Knowle, England, assignor to British Gas Corporation, London, England

Continuation of Ser. No. 744,026, Nov. 22, 1976, abandoned.
This application Oct. 24, 1978, Ser. No. 954,076
Claims priority, application United Kingdom, Nov. 27, 1975, 48806/75
Int. Cl.² B01J *3/00*
U.S. Cl. 48—62 R **10 Claims**

1. In a coal slagging gasifier comprising: a gasifying vessel; means for introducing coal into said vessel for gasification thereof in said vessel; means for introducing oxygen and steam into said vessel to effect gasification of coal therein; a hearth located at the bottom of said vessel and including a slag removal orifice for removing slag therefrom; burner means located beneath the slag removal orifice for directing a flow of hot combustion products up the slag removal orifice to retain the slag in a molten condition on said hearth; a quenching chamber positioned below said slag removal orifice for receiving slag discharged through said slag removal orifice; and means for reducing or stopping said flow of hot combustion gases for discharging slag through said slag removal orifice; the improvement wherein said slag-removal orifice is located centrally within said hearth and is formed as a substantially vertical passageway through a removable slag tap member, said slag tap member comprising a solid cast mass of high thermal conductivity metal having an integrally formed metal



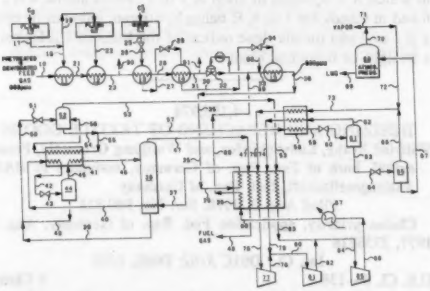
tube for circulating a coolant liquid through said cast mass, and having an upper tundish surface across which discharged slag flows, said upper surface sloping downwardly and inwardly and merging with said slag removal orifice, said coolant tube being capable of retaining its shape without any appreciable distortion during the casting of the surrounding metal mass, extending through said cast mass and forming a coolant conduit adjacent to said tundish surface and to the surface of said orifice passageway and spaced from said surfaces a distance of 0.25 to 1.5 inches, the ends of said tube projecting exteriorly of the surrounding cast metal mass to provide a coolant inlet and outlet.

4,195,979

LIQUEFACTION OF HIGH PRESSURE GAS

Michael D. Martin, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 12, 1978, Ser. No. 905,507
Int. Cl.² F25J *3/02*
U.S. Cl. 62—26 **21 Claims**



1. A process for liquefying a gas having an elevated pressure above about 650 psia, comprising:

a. cooling said gas at said elevated pressure in at least one cooling stage, by indirect heat exchange with at least one refrigerant, to a first reduced temperature close to but above its liquefaction temperature at said elevated pressure;
b. reducing the pressure of said cooled gas to a first reduced pressure substantially above atmospheric pressure and above its liquefaction pressure at said first reduced temperature;
c. further cooling said reduced pressure gas in at least one additional cooling stage, by indirect heat exchange with a refrigerant, to a second reduced temperature at which said gas is liquefied at said first reduced pressure; and
d. further reducing the pressure of said liquefied gas, in at least one pressure reduction stage, to a second reduced pressure essentially equal to atmospheric pressure.

4,195,980

METHOD OF MANUFACTURING A CONTINUOUS OPTICAL PREFORM

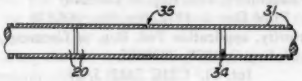
Henley F. Sterling, Great Dunmow, and John Irven, Harlow, both of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed May 15, 1978, Ser. No. 906,185

Claims priority, application United Kingdom, May 17, 1977, 20681/77

Int. Cl.[2] **C03C** *25/00, 25/02*

U.S. Cl. 65—3 A **7 Claims**



3. A method of manufacturing a continuous preform for an optical fibre of the type produced from a silica tube via a rod preform stage, the method including collapsing inwardly lengths of silica tube each into a rod preform, arranging the preforms end to end in a rectilinear array, placing silica sleeving tubes abutting one another over the rods, and heating the preform so as to fusion seal the assembly into a continuous rod, whereby the joints between the rods or tubes and between the abutting sleeving tubes are sealed and in which the sleeving tubes are so arranged that the joints therebetween are not coincident with the joints between the rods.

6. A method as claimed in claim 1 and in which the end portions of the rod preforms are removed prior to jointing.

4,195,981

MOLTEN GLASS HOMOGENIZER AND METHOD OF HOMOGENIZING GLASS

H. Larry Penberthy, 631 S. 96th St., Seattle, Wash. 98108

Continuation-in-part of Ser. No. 798,879, May 20, 1977, Pat. No. 4,113,460. This application May 12, 1978, Ser. No. 905,337

The portion of the term of this patent subsequent to Sep. 12, 1995, has been disclaimed.

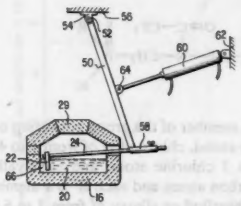
Int. Cl.[2] **C03B** *5/18*

U.S. Cl. 65—134 **20 Claims**

12. A glass mixing arrangement comprising a glass forehearth having a channel through which molten glass flows, a plate forming a paddle in said forehearth, said plate being oriented in said channel to present its thinnest dimension to the glass flow in said channel whereby said paddle presents a minimum impedance to the flow of glass through said channel, a drive rod coupled to said paddle and extending out of said forehearth, drive means coupled to said rod for driving said paddle with substantially reciprocating motion transversely across said channel and laterally thereto from adjacent one forehearth side wall to the other with the lower edge of said paddle near the bottom of the forehearth so that substantially all glass across said channel will be disturbed by said reciprocating motion.

18. Method of mixing molten glass flowing along a glass forehearth including a channel having sidewalls and a bottom, so that molten glass adjacent the sidewalls and bottom is uniformly mixed with molten glass in the flow thereof comprising the steps of:

providing a stirrer means disposed in said channel for mixing said glass, said stirrer means having a lower surface disposed adjacent the bottom of the channel and front and rear surface portions disposed substantially facing respective sidewalls of the channel;



driving said stirrer means with a substantial reciprocal motion transversely across said channel from adjacent one sidewall to the other and across said bottom to disturb substantially all molten glass adjacent the sidewalls and bottom with each reciprocal cycle and mix said glass with the flow of molten glass.

4,195,982

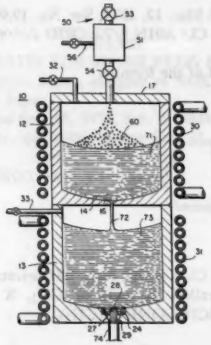
METHOD FOR EXTRUDING ARTICLES

Alexander Coucoulas, Bridgewater Township, Somerset County, and John R. Nis, Hamilton Township, Mercer County, both of N.J., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed Dec. 26, 1978, Ser. No. 973,481

Int. Cl.[2] **C03B** *37/02, 50/16*

U.S. Cl. 65—134 **8 Claims**



1. A method of forming a substantially bubble-free viscous melt from a solid particulate material, the method comprising the steps of:

simultaneously subjecting the solid particulate material to an elevated temperature and gas pressure to consolidate the particulate into a viscous melt while inducing the elevated pressure in any bubbles formed therein; and

lowering the gas pressure to expand the gas bubbles to increase the upward mobility thereof wherein the bubbles will rise to the top of the melt and break through the surface.

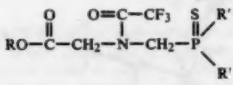
4,195,983

N-TRIFLUOROACETYL-N-PHOSPHINOTHIOYLMETHYLGLYCINE ESTERS

John E. Franz, Crestwood, and Robert J. Kaufman, University City, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 26, 1978, Ser. No. 973,317
Int. Cl.[2] A01N 9/36; C07F 9/40
U.S. Cl. 71—87 **7 Claims**

1. A compound of the formula



wherein R is a member of the group consisting of alkyl of from 1 to 10 carbon atoms, chloroalkyl of from 1 to 4 carbon atoms and from 1 to 3 chlorine atoms and alkoxyalkyl containing from 3 to 7 carbon atoms and each R' is a member of the class consisting of thioalkyl or alkoxy of from 1 to 6 carbon atoms, cyanoalkoxy, chloroalkenyloxy, phenoxy, phenylthio and substituted phenoxy and phenylthio having 1 to 2 substituents selected from the class consisting of halo, trifluoromethyl, lower alkyl and lower alkoxy.

7. A herbicidal composition comprising a herbicidally effective amount of a compound of claim **1** and an inert diluent.

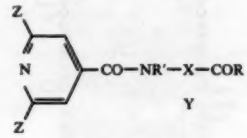
4,195,984

HERBICIDES DERIVED FROM DIHALO ISONICOTINOYL DERIVATIVES OF AMINO ACIDS

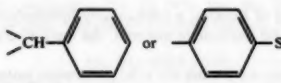
Robert G. Stein, Kenosha, Wis., and Donald S. Kenney, Northbrook, Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Mar. 12, 1979, Ser. No. 19,995
Int. Cl.[2] A01N 9/22; C07D 213/40
U.S. Cl. 71—94 **18 Claims**

1. A compound of the formula

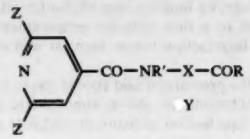


wherein Z is Br or Cl, R is OH, NH_2, NH-loweralkyl, NH-phenyl or N-diloweralkyl, R is H or CH_3, X is phenylene, $>C(CH_3)_2$, $>CHCH_2CONH_2$, $-(CH_2)_n$,

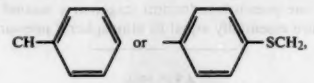


with n being an integer from 2–5, or wherein the moiety embraced as Y represents the acyl portion of a naturally occuring amino acid, and agriculturally acceptable acid addition salts thereof.

10. A herbicidal composition containing as an active ingredient, a compound of the formula



wherein Z is Br or Cl, R is OH, NH_2, NH-loweralkyl, NH-phenyl or N-diloweralkyl, R is H or CH_3, X is phenylene, $>C(CH_3)_2$, $>CHCH_2CONH_2$, $-(CH_2)_n$,



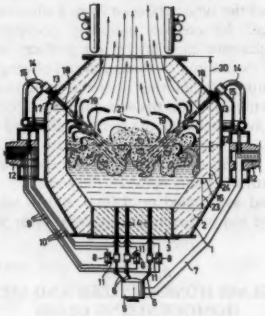
with n being an integer from 2–5, or wherein the moiety embraced as Y represents the acyl portion of a naturally occuring amino acid, and agriculturally acceptable acid addition salts thereof, together with an agriculturally acceptable diluent.

4,195,985

METHOD OF IMPROVEMENT OF THE HEAT-BALANCE IN THE REFINING OF STEEL

Karl Brotzmann, Sulzbach-Rosenberg, Fed. Rep. of Germany, assignor to Eisenwerk-Gesellschaft Maximilianshutte mbH., Sulzbach-Rosenberg, Fed. Rep. of Germany

Filed Dec. 1, 1978, Ser. No. 965,676
Claims priority, application Fed. Rep. of Germany, Dec. 10, 1977, 2755165; Sep. 7, 1978, 2838983
Int. Cl.[2] C21C 5/32, 5/34
U.S. Cl. 75—60 **12 Claims**



1. A method of producing steel in a convertor comprising:

(1) introducing oxygen shrouded by a protective medium into the convertor by means of tuyeres located in the lining of the convertor below the surface of a bath in said convertor; and

(2) concurrently therewith blowing oxygen onto the surface of the bath;

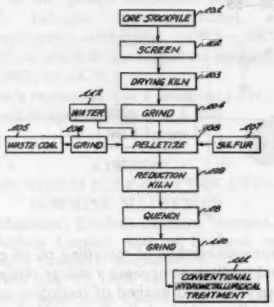
the improvement of that method comprising that for at least a major part of the refining time, 20 to 80% of the oxygen is introduced into said convertor by gas jets directed onto the surface of the bath which act as free jets in the space above the surface of the bath, said jets having a sufficient velocity to suck in large amounts of reaction products of the bath, and that the remaining amount of oxygen is concurrently blown into said bath by means of said tuyeres, whereby the heat balance in said method is improved and the proportion of scrap charged into said convertor for melting is increased.

4,195,986

SELECTIVE REDUCTION OF NICKEL LATERITE ORES

Jerry D. Schulz, Waukesha, and Bobby P. Faulkner, New Berlin, both of Wis., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Oct. 6, 1978, Ser. No. 949,394
Int. Cl.[2] C22B 23/00
U.S. Cl. 75—82 15 Claims



1. A process for extracting nonferrous metals from nickel laterite ore by a selective reduction treatment that causes the nonferrous metal oxide components of the ore to be reduced but effects substantially only partial reduction of the iron oxide components, and a subsequent hydrometallurgical treatment by which the nonferrous metals are leached out of the reduced ore, characterized by:

A. preparing the ore for selective reduction treatment by

(1) comminuting it (104), and

(2) forming a mixture (as at 108) of the comminuted ore with

(a) comminuted high volatile sulfur containing coal (105, 106) and

(b) a non-gaseous sulfur material added in an amount such that the total weight of the sulfur present including the sulfur in the coal, is between 1% and 1.5% of the weight of the ore; and

B. while

(1) maintaining particles of ore and coal in intimate contact with one another and

(2) substantially preventing air and free oxygen from having access to the mixture,

supplying sufficient heat to the mixture (109) to drive off volatile components from the coal, so that they provide a reducing atmosphere for the ore, and to bring the mixture to a temperature at which the nonferrous metal oxides in the ore are substantially completely reduced but the iron oxides in the ore are reduced only partially.

4,195,987

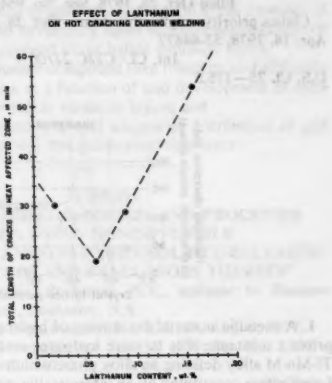
WELDABLE ALLOYS

Robert B. H. Herchenroeder, Kokomo, Ind., assignor to Cabot Corporation, Kokomo, Ind.

Continuation of Ser. No. 644,843, Dec. 29, 1975, abandoned, which is a continuation-in-part of Ser. No. 99,738, Dec. 21, 1970, abandoned. This application Sep. 23, 1977, Ser. No. 835,875
Int. Cl.[2] C22C 19/05
U.S. Cl. 75—122 10 Claims

1. A weldable and oxidation resistant alloy consisting essentially by weight of:

about 18–25% chromium
about 15–33% iron
about 1–4% tungsten
about 1–4% molybdenum
about 0.02–0.2% carbon
about 0.3–2% silicon
about 0–21% cobalt
an effective amount of lanthanum to provide weldability and high temperature oxidation resistance but not exceeding about 0.10% and in a sufficiently concentrated from that the total amount of all other rare earth metals is less than


EFFECT OF LANTHANUM ON HOT CRACKING DURING WELDING
TOTAL LENGTH OF CRACKS IN HEAT AFFECTED ZONE, in mm
LANTHANUM CONTENT, wt %

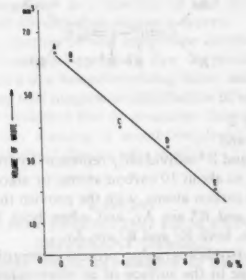
the amount of lanthanum, and the balance nickel in an amount sufficient when combined with cobalt and incidental impurities to provide a combined total within the range about 38 to 72%, with the sum of the tungsten and molybdenum present being less than b 8%.

4,195,988

AU-PD-CR ALLOY FOR SPARK PLUG ELECTRODES

Tsuneo Ito, Nagoya, Japan, assignor to NGK Spark Plug Co., Ltd., Nagoya, Japan

Filed Sep. 18, 1978, Ser. No. 943,497
Claims priority, application Japan, Sep. 16, 1977, 52-111910
Int. Cl.[2] C22C 5/00
U.S. Cl. 75—165 4 Claims

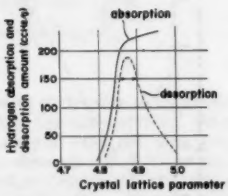


1. An alloy for spark plug center electrodes consisting of about 1 to about 10% by weight of chromium, about 30 to about 70% by weight of palladium and the balance gold.

4,195,989
HYDROGEN STORAGE MATERIAL

Takaharu Gamo, Fujiidera; Yoshio Moriwaki, Hirakata; Toshio Yamashita, Katano, and Masataro Fukuda, Toyonaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Oct. 25, 1978, Ser. No. 954,619
Claims priority, application Japan, Oct. 28, 1977, 52-130049; Apr. 14, 1978, 53-44677
Int. Cl.[2] C22C 22/00
U.S. Cl. 75—175.5 7 Claims



1. A metallic material for storing of hydrogen which comprises a substance able to store hydrogen and composed of a Ti-Mn-M alloy defining an alloy phase which is substantially a Laves phase constituted by an intermetallic compound, which has a hexagonal crystal structure of the $MgZn_2(C_{14})$ type, and crystal structure parameters a and c which have values in the ranges:

$a=4.86\sim4.90$ Å
$c=7.95\sim8.02$ Å

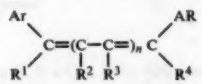
said M of said Ti-Mn-M alloy representing at least one metal selected from the group consisting of vanadium, chromium, iron, cobalt, nickel, copper and molybdenum.

4,195,990
ELECTROPHOTOGRAPHIC PAPERS EMPLOYING ORGANIC PHOTOCONDUCTORS

William J. Staudenmayer; Michael T. Regan; James A. Van Allan, and William E. Yoerger, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 25, 1977, Ser. No. 800,482
Int. Cl.[2] G03C 5/04, 5/09
U.S. Cl. 430—70 14 Claims

1. An electrophotographic element comprising an electrically conducting paper support bearing a layer of a heterogeneous photoconductive insulating composition comprising particles of an organic photoconductor in admixture with at least a sensitizing amount of cellulose nitrate, said photoconductor being a polyphenyl having at least three para-linked phenyl groups or a compound of the structure:



wherein

n is 0, 1, or 2

Ar is aryl; and

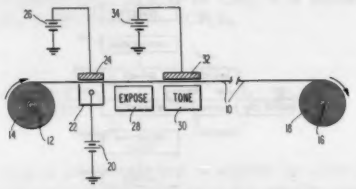
R^1, R^2, R^3 and R^4 individually represent hydrogen, Ar, alkyl having 1 to about 10 carbon atoms, or alkoxy having 1 to about 10 carbon atoms, with the proviso that when n is 0, both R^1 and R^4 are Ar, and when both R^1 and R^4 are hydrogen, both R^2 and R^3 are Ar.

12. An electrophotographic process comprising applying a uniform charge to the surface of an electrophotographic element, imagewise exposing said charged surface to actinic radiation to form an electrostatic latent image, and developing said latent image to form a visible image, said electrophotographic element being an element as defined in claim 1.

4,195,991
ELECTROGRAPHIC RECORDING METHOD OF APPLYING AN ELECTRIC FIELD OPPOSITE THE CHARGE RETAINING LAYER

Lee R. Brown; L. Herrera José, both of Houston, Tex., and John D. Plumadore, Westfield, Mass., assignors to James River Graphics Inc., South Hadley, Mass.

Filed Oct. 21, 1977, Ser. No. 844,304
Int. Cl.[2] G03G 15/02, 13/02
U.S. Cl. 430—55 5 Claims



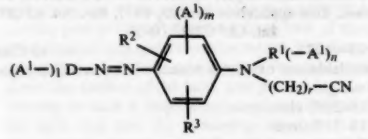
1. An improved method of recording on an electrographic medium, said medium comprising a charge retaining layer and a conductive layer, said method of recording comprising the steps of providing a desired distribution of charge of a given polarity on the surface of the charge retaining layer representing an image to be recorded and developing said image, wherein the improvement comprises the step of applying a uniform electric field, having said given polarity, to the medium from the side opposite the charge retaining layer, said electric field penetrating through the conductive layer and having sufficient field strength at the charge retaining layer to reduce the tendency of charge to be deposited in an undesired pattern on the surface of the charge retaining layer as a result of defects in the medium.

4,195,992
PHOTOGRAPHIC DYE DIFFUSION TRANSFER PROCESS

Rudolf Stolzenburg, Duesseldorf; Paul Marx, and Walter Puschel, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 18, 1978, Ser. No. 925,870
Claims priority, application Fed. Rep. of Germany, Jul. 22, 1977, 2733112
Int. Cl.[2] G03C 5/54, 1/40, 1/10
U.S. Cl. 430—242 6 Claims

1. Photographic dye diffusion transfer process for the production of coloured images, in which a photographic material having at least one light-sensitive silver halide emulsion layer and a non-diffusible dye-providing compound associated with this layer is exposed imagewise and developed with a silver halide developer, a diffusible dye being released imagewise from the non-diffusible dye-providing compound under alkaline photographic development conditions transferred to an image receptor layer, in which the non-diffusible dye providing compound used is a compound corresponding to the following formula I:



(I)

in which

A^1 represents an oxidizable organic carrier residue containing a group which confers diffusion resistance, from

which residue, either in its oxidized or in its unoxidized form, at least a part thereof together with the group which confers diffusion resistance is split off under alkaline photographic development conditions and at the same time a diffusible azo dye is released imagewise;

D represents a heterocyclic or carbocyclic aromatic group;

R^1 represents hydrogen or an alkyl, aralkyl or aryl group

R^2 and R^3, which may be the same or different, each represents one of the groups mentioned under R^1, sulpho, —$COOR^4$, halogen, trihalogenmethyl, acylamino, acyloxy, carbamoyl, sulphamoyl, —OR^4—, SR^4, —SOR^4, —SO_2—R^4, in which R^4 has one of the meanings specified for R^1, —NO_2 or —CN;

l, m and n each represents 0 or 1 such that l+m+n=1; and

r represents an integer of from 1 to 4.

4,195,993

COMPOUNDS WHICH RELEASE CYAN DYES OR DYE FORMING MATERIALS

Kenneth N. Kilminster, Linslade Leighton Buzzard, and Colin Holstead, Abbots Langley, both of England, assignors to Eastman Kodak Company, Rochester, N.Y.

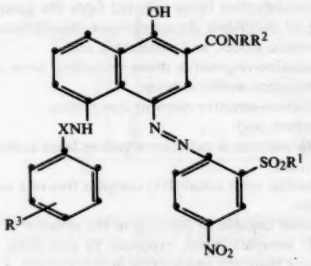
Filed Aug. 17, 1978, Ser. No. 934,454

Claims priority, application United Kingdom, Dec. 12, 1977, 51648/77

Int. Cl.² G03C *5/54, 1/40, 1/76, 1/10*

U.S. Cl. 430—225 **22 Claims**

1. A photographic element comprising a support having thereon at least one photosensitive silver halide emulsion layer, said emulsion layer having associated therewith a nondiffusible compound which releases a diffusible cyan dye, said compound having the following formula:



wherein:

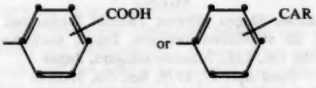
R^1 is selected from the group consisting of aryl, alkyl and $NR^{11}R^{12}$ wherein R^{11} is alkyl or aryl, R^{12} is alkyl, or R^{11} and R^{12}, taken together with the nitrogen atom to which they are attached, is a heterocyclic group;

X is —CO— or —SO_2—;

R^3 is —COOH or —CAR and is attached in the meta or para position to X in the benzene ring;

R is alkyl;

R^2 is



or can be taken together with R and the nitrogen atom to which it is attached to form a heterocyclic ring, unsubstituted or substituted with a carboxy group; and

CAR is a ballasted carrier moiety which, as a function of oxidation under alkaline conditions, releases a diffusible dye, with the proviso that the compound contains at least one CAR group and, except when R and R^2 form a heterocyclic group and X is —SO_2—, must contain at least one carboxy group.

18. A process for producing a photographic transfer image in color comprising:

(a) imagewise exposing the photographic element of claim **1**;

(b) treating said imagewise-exposed photographic element with an alkaline processing composition in the presence of a silver halide developing agent to effect development of each of the exposed silver halide emulsion layers,

(c) said nondiffusible compound then releasing said diffusible dye imagewise as a function of said development of each of said silver halide emulsion layers; and

(d) at least a portion of said imagewise distribution of said dye diffusing to a dye image-receiving layer.

4,195,994

PHOTOGRAPHIC PRODUCTS AND PROCESSES EMPLOYING NONDIFFUSIBLE 6-ARYLAZO-2-AMINO-3-PYRIDINOL DYE-RELEASING COMPOUNDS AND PRECURSORS THEREOF

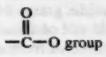
Derek D. Chapman, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 822,189, Aug. 5, 1977, abandoned. This application Jan. 16, 1979, Ser. No. 3,837

Int. Cl.² G03C *5/54, 1/40, 1/76, 1/10*

U.S. Cl. 430—224 **34 Claims**

30. A process for producing a photographic transfer image in color in an imagewise-exposed photographic element comprising a support having thereon at least one photosensitive silver halide emulsion layer, said emulsion layer having associated therewith a nondiffusible compound having a releasable, diffusible, 6-arylazo-2-amino-3-pyridinol dye moiety or precursor thereof where the hydroxy group of said pyridinol is a hydroxy precursor, said compound containing in the ortho position of the arylazo moiety a ballasted carrier moiety attached thereto either through the sulfonamido linking group or through the oxygen of a



which said ballasted carrier moiety contains, said ballasted carrier moiety being capable of releasing said diffusible 6-arylazo-2-amino-3-pyridinol dye or precursor thereof as a function of development of said silver halide emulsion layer under alkaline conditions, said process comprising:

(a) treating said photographic element with an alkaline processing composition in the presence of a silver halide developing agent to effect development of each of the exposed silver halide emulsion layers;

(b) said dye-releasing compound then releasing said diffusible 6-arylazo-2-amino-3-pyridinol dye or precursor thereof imagewise as a function of said development of each of said silver halide emulsion layers;

(c) at least a portion of said imagewise distribution of said 6-arylazo-2-amino-3-pyridinol dye or precursor thereof diffusing to a dye image-receiving layer; and

(d) contacting said imagewise distribution of said 6-arylazo-2-amino-3-pyridinol dye or precursor thereof with metal ions, thereby forming a metal-complexed, 6-arylazo-2-amino-3-pyridinol dye transfer image.

4,195,995

METHOD FOR PRODUCING FILM EXPOSED TO DIFFERENT IMAGES

Randall J. Hoehn, Pekin, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 28, 1978, Ser. No. 901,038

Int. Cl.² G03C *5/04, 5/24, 5/26*

U.S. Cl. 430—142 **1 Claim**

1. In a method for mechanically producing a reproducible

image on a film which includes exposing the film to a first image, passing the exposed film to a developing station and developing the film in a single machine, the improvement comprising:

blocking the function of the developing station;

passing the exposed film through said single machine and controllably recovering the exposed film from said single machine without developing said exposed film;

subsequently exposing said exposed film to a second different image in said single machine and forming a composite exposed film;

passing the composite exposed film to the developing station of said single machine; and

developing said composite exposed film in said single machine.

4,195,996

METHOD OF RECORDING RADIATION IMAGE

Yosuke Nakajima, Minami-ashigara; Yoshiyuki Hoshi, and Takayoshi Fukuoka, both of Fujinomiya, all of Japan, assignors to Fuji Photo Film Co., Ltd., Ashigara, Japan

Filed Feb. 28, 1978, Ser. No. 881,944

Claims priority, application Japan, Feb. 28, 1977, 52-21833

Int. Cl.[2] G03C *7/00, 1/92*

U.S. Cl. 430—380 **23 Claims**

1. A method of recording a radiation image which comprises image-wise exposing to radiation, in combination with a fluorescent intensifying screen, a light-sensitive photographic element comprising a water-proof support, which has an average degree of reflection, based on the degree of reflection of a magnesium oxide white plate being 100%, of about 70 percent or greater in the spectral wavelength region of from about 380 mμ to about 600 mμ, and having on only one surface of the support a coating of a green sensitized silver halide photographic emulsion containing a phenolic color coupler or an α-naphtholic color coupler, each capable of forming a quinoneimine dye having a maximum absorption within a spectral wavelength region of about 550 mμ to about 700 mμ on color development, where the silver halide grains of the emulsion have a number average grain size of about 0.5μ to about 2.2μ and are present in an amount of from about 0.5 g to about 3 g of silver per m^2, and

then subjecting the image-wise exposed light-sensitive photographic element to a color development processing with a phenylenediamine color developing agent and without a silver-removal step.

4,195,997

PHOTOPOLYMERIZABLE COMPOSITIONS CONTAINING SELECTED CELLULOSE ACETATE BUTYRATE AS A BINDER

Boynton Graham, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 23, 1978, Ser. No. 871,683

Int. Cl.[2] G03C *1/68*

U.S. Cl. 430—286 **6 Claims**

1. An element comprising a polymeric film support and a photopolymerizable composition in the form of a layer on said polymeric film support and having low to moderate adhesion thereto, said composition comprising

(a) at least one addition polymerizable ethylenically unsaturated compound having a boiling point greater than 100° C. at normal pressure;

(b) an organic, free radical generating addition polymerization initiator or initiator system activatable by actinic radiation in the ultraviolet to visible region of the spectrum; and

(c) 25 to 90 percent by weight, based on the weight of the photopolymerizable composition of at least one macromolecular organic polymeric binder, the improvement being to better the resistance to cold flow of the layer by at least half of the binder component being cellulose acetate butyrate containing 44 to 50 weight percent butyryl groups, 5.0 to 8.5 weight percent acetyl groups and 0.5 to 1.0 weight percent hydroxyl groups, said layer being laminatible to a board, for imagewise exposure and solvent development to form a resist image on said board.

4,195,998

CO(III) COMPLEX CONTAINING RADIATION SENSITIVE ELEMENT WITH DIAZO RECORDING LAYER

Anthony Adin, Rochester, and James C. Fleming, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division and continuation-in-part of Ser. No. 618,186, Sep. 30, 1975, abandoned, which is a continuation-in-part of Ser. No. 461,057, Apr. 15, 1974, abandoned. This application Oct. 27, 1977, Ser. No. 846,240

Int. Cl.[2] G03C *1/52, 1/72*

U.S. Cl. 430—156 **6 Claims**

1. A radiation-sensitive element comprising:

(a) a support and,

(b) on the support, a radiation-sensitive layer comprising, in admixture:

a reducible, inert cobalt(III) complex free of a sensitizable anion,

a photoreductant capable of forming, in the absence of a cobalt(III) complex, upon exposure to activating radiation longer than 300 nanometers in wavelength, a reducing agent which forms a redox couple with the cobalt(III) complex when associated therewith, said photoreductant being selected from the group consisting of disulfides, diazoanthrones, diazophenanthrones, aromatic azides, and carbazides, and

(c) a radiation-responsive diazo recording layer overlying said radiation-sensitive layer.

5. A radiation-sensitive element comprising

(a) a support, and

(b) on the support, a radiation-sensitive layer comprising, in admixture,

a reducible, inert cobalt(III) complex free of a sensitizable anion,

a quinone capable of forming in the absence of a cobalt(III) complex, upon exposure to activating radiation longer than 300 nanometers in wavelength, a reducing agent which forms a redox couple when associated with the cobalt(III) complex, said quinone containing one or more labile hydrogen atoms, and

(c) a radiation-responsive diazo recording layer overlying said radiation-sensitive layer.

4,195,999

SILVER HALIDE PHOTOGRAPHIC MATERIAL CONTAINING ULTRAVIOLET LIGHT ABSORBING AGENT

Keiichi Adachi; Shigeo Hirano; Tadashi Ikeda, and Takeshi Mikami, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

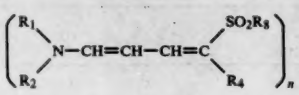
Filed Apr. 17, 1978, Ser. No. 896,870

Claims priority, application Japan, Apr. 15, 1977, 52-43278

Int. Cl.[2] G03C *1/84, 1/76, 1/72, 1/06*

U.S. Cl. 430—507 **25 Claims**

1. A silver halide photographic material comprising a support having thereon at least one photographic silver halide emulsion layer, with the silver halide photographic material containing, as an ultraviolet light absorbing agent, at least one compound represented by the general formula (I)



(I)

wherein R_1 and R_2, which may be the same or different, each represents an alkyl group having 1 to 20 carbon atoms; R_4 represents —$COOR_6$ or —COR_6, wherein R_6 represents an alkyl group having 1 to 20 carbon atoms or an aryl group having 6 to 20 carbon atoms and R_8 represents an aryl group having 6 to 20 carbon atoms; and n represents an integer of 1 or 2, and when n is 2, at least one of R_1, R_2 and R_6 represents an alkylene group or an arylene group and the compound of the general formula (I) is a dimer.

4,196,000

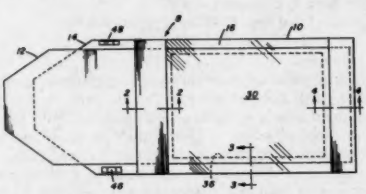
PHOTOGRAPHIC FILM UNIT

William H. Johnson, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 834,590, Sep. 19, 1977, abandoned. This application Aug. 31, 1978, Ser. No. 938,614

Int. Cl.² G03C *1/48*; G03D *9/02*

U.S. Cl. 430—207 **2 Claims**



1. An instant-processing film unit for use in processing apparatus, the apparatus having means for locating the film unit in an exposure position and a pair of pressure members for initiating processing of the film unit, said film unit comprising:

first and second sheets each having lateral margins, one of said sheets including a photosensitive layer for recording a processible latent image and an opaque layer for shielding one face of said photosensitive layer from fogging, the other of said sheets comprising a transparent cover;

means for coupling said sheets together, along their lateral margins, superposed with said photosensitive layer between said opaque layer and said transparent cover;

means for supplying processing fluid to said photosensitive layer to process the latent image;

a leader for removing said film unit from the apparatus between the pressure members;

a dark slide removable positioned between said sheets for shielding said photosensitive element from light passing through said transparent cover, said dark slide having a leading end section extending from between said sheets and superposed with said leader; and

shim means carried by said leader and positioned on opposite sides of said dark slide both for: (a) supporting the pressure members apart to provide clearance for removing said dark slide between the pressure members; and (b) preventing shifting of said photosensitive element when said dark slide is so removed.

4,196,001

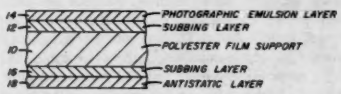
ANTISTATIC LAYER FOR PHOTOGRAPHIC ELEMENTS

Douglas C. Joseph, Victor, and Ronald L. Hartman, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 491,414, Jul. 24, 1974, abandoned. This application Apr. 16, 1975, Ser. No. 569,233

Int. Cl.² G03C *1/78, 1/96*; H01B *1/06*

U.S. Cl. 430—502 **30 Claims**



1. A photographic element comprising:

(1) a support;

(2) at least one radiation-sensitive image-forming layer; and

(3) an antistatic layer coated on said support which is durable, abrasion-resistant, non-tacky and resistant to leaching by aqueous processing baths employed in photographic processing; said antistatic layer having been formed by coating a liquid coating composition and drying the coating, said liquid coating composition comprising:

(a) a water-soluble film-forming polymeric anionic polyelectrolyte in free acid form;

(b) a water-soluble film-forming cross-linkable polyvinyl alcohol binder that reacts chemically with said polyelectrolyte during drying of said coating; and

(c) an acid-acting cross-linking agent that cross-links said polyvinyl alcohol binder during drying of said coating.

4,196,002

PHOTOTHERMOGRAPHIC ELEMENT CONTAINING HEAT SENSITIVE DYE MATERIALS

Steven R. Levinson, and Anthony Adin, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 834,587, Sep. 19, 1977, abandoned. This application Oct. 23, 1978, Ser. No. 953,986

Int. Cl.² G03C *1/84*

U.S. Cl. 430—617 **36 Claims**

1. In a photothermographic element comprising (a) a support, having thereon (b) a photothermographic layer and, on the support or in the support, (c) an antihalation or filter component, the improvement wherein said element comprises, as (c), in reactive association, (i) at least one hexaarylbiimidazole with (ii) at least one antihalation or filter dye that is reactive with the product formed upon heating said hexaarylbiimidazole to a temperature of at least about 90° C., and wherein said antihalation or filter component becomes essentially colorless within about 20 minutes upon heating to a temperature of at least 90° C.

4,196,003

LIGHT-SENSITIVE O-QUINONE DIAZIDE COPYING COMPOSITION

Masaru Watanabe, Shizuoka, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation of Ser. No. 546,482, Feb. 3, 1975, abandoned. This application Feb. 2, 1977, Ser. No. 765,036

Claims priority, application Japan, Feb. 1, 1974, 49-13465

Int. Cl.² G03C *1/60, 1/54*

U.S. Cl. 430—193 **5 Claims**

1. A composition for a light-sensitive copying layer consisting essentially of an admixture of distinct compounds selected from a), b) and c) below:

(a) an o-quinonediazide compound which has at least one o-quinonediazide group which undergoes an increase in solubility in alkaline solution upon irradiation with active light;

(b) a resin selected from the group consisting of a phenol-formaldehyde resin, a cresol-formaldehyde resin, a styrene-maleic anhydride copolymer or a methacrylic acid-methylmethacrylate copolymer; and

(c) at least one of a secondary or a tertiary aliphatic, hydroxy aliphatic or aromatic amine or hexamethylene-tetramine having a boiling point of not less than about 200° C., wherein said aliphatic amine is tributylamine or triamylamine, said hydroxy aliphatic amine is diethanolamine, N-methylethanolamine, N-methylidiethanolamine, dipropanolamine, or triethanolamine and wherein said aromatic amine is diethylaniline, wherein the proportion of said amine c) to said o-quinonediazide compound a) ranges from about 0.005 to 1 part by weight, per part by weight fo said o-quinonediazide compound and wherein said composition when used as a supported light-sensitive layer is capable, after image-wise exposure to active light, of forming a positive or negative image in the same layer,

said positive image being formed by processing with an alkaline developer and

said negative image being formed by heating, subsequent to exposure of previously unexposed or all portions of the layer with active light followed by processing with an alkaline developer.

4,196,004

CORROSION RESISTANT GLASSES THAT CONTAIN CHEMICAL ADDITIVES FOR APPLICATION OVER METAL SUBSTRATES

Manfred Berretz, Ponca City, Okla.

Filed Mar. 22, 1978, Ser. No. 888,832
Int. Cl.[2] C03C *5/00, 7/02, 7/04*
U.S. Cl. 106—48 **11 Claims**

1. The method of enhancing the mechanical strength, impact, abrasion, and thermal shock resistance of both a transparent and opaque, acid, alkaline, and water resistant host glass which comprises the steps of incorporating into a frit of the host glass crystalline additives which are insoluble in the molten host glass in ratios of from 5% to 80% by weight of the host glass, said additives selected from one or more of the following chemical constituents:

Lithium Titanate
Lithium Silicate
Lithium Aluminate
Lithium Aluminum Silicate
Magnesium Titanate
Magnesium Silicate,

wherein the transparent host glass is composed of the following ingredients:

SiO_2	48–70
TiO_2	1.5–10
ZrO_2	2–10
Li_2O	0.5–12
Na_2O	5–20
K_2O	1–5
MgO	1–5
CaO	1.5–6
CaF_2	1–6
SrO	1–5

and the opaque host glass is composed of the following ingredients:

SiO_2	45–72
TiO_2	12–20
ZrO_2	5–16
Li_2O	0.5–5
Na_2O	6–12
K_2O	0–6
MgO	0.5–4
CaO	1–4
P_2O_5	2–8
ZnO	0–4
Al_2O_3	0–3
B_2O_3	2–8

4,196,005

FLAME RESISTANT PHOSPHATE COMPOSITIONS

Albert W. Morgan, Collinsville, Ill., and Roland G. Ribaudo, Affton, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed May 1, 1978, Ser. No. 901,531
Int. Cl.[2] C09K *3/22, 3/28*
U.S. Cl. 106—18.16 **12 Claims**

1. A sprayable, flame resistant gel composition consisting essentially of from about 50 to about 99% normally liquid essentially halogen-free aromatic ester selected from the group consisting of phosphate and polycarboxylate and mixtures thereof and, substantially uniformly dispersed throughout said ester, from about 1 to about 50% finely divided inorganic phosphate, wherein said inorganic phosphate is essentially ammonium phosphate and has an average particle size from about 0.5 to about 40 microns, said aromatic phosphate is selected from di(C_4–C_{20} alkyl) aryl, C_4–C_{20} alkyl diaryl and triaryl phosphates in which each aryl radical is unsubstituted phenyl or C_1–C_{12} alkylphenyl, and said polycarboxylate is selected from di(C_1–C_{20} alkyl), C_1–C_{20} alkyl benzyl and dibenzyl phthalates.

4,196,006

JET PRINTING INK

Ishwar R. Mansukhani, Neenah, Wis., assignor to Whittaker Corporation, Los Angeles, Calif.

Filed Sep. 8, 1978, Ser. No. 940,500
Int. Cl.[2] C09D *11/02*
U.S. Cl. 106—22 **4 Claims**

1. In a process for information recording comprising producing a fine jet of colored aqueous liquid, directing the jet of colored liquid onto a recording medium, modulating the density of the applied jet by an electric field in accordance with the information to be recorded, the improvement comprising the presence as a humectant an effective amount of the internal anhydride of at least one carboxylic acid selected from the group consisting of fatty acids, acetylenic acids, alicyclic acids and aromatic acids.

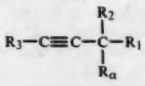
4,196,007

JET PRINTING INK

Ishwar R. Mansukhani, Neenah, Wis., assignor to Whittaker Corporation, Los Angeles, Calif.

Filed Sep. 8, 1978, Ser. No. 940,502
Int. Cl.[2] C09D *11/02*
U.S. Cl. 106—22 **24 Claims**

1. In a process for information recording comprising producing a fine jet of colored aqueous liquid containing at least one direct dye, directing the jet of colored liquid onto a recording medium, modulating the density of the applied jet by an electric field in accordance with the information to be recorded, the improvement comprising the presence as a humectant of an effective amount of at least one water-soluble acetylenic compound exhibiting the structural formula.



in which each of R_1 and R_2 may be substituents selected from the group consisting of hydrogen, alkyl, alkenyl, alkynyl, hydroxy-substituted and alkoxy-substituted alkyl, alkenyl, and alkynyl groups, and R_1 and R_2 may together be a carbonyl

oxygen; R_3 may be a substituent of the group consisting of hydrogen, halogen, alkyl, alkenyl, alkynyl, hydroxy-substituted and alkoxy-substituted alkenyl and alkynyl groups, and substituted-alkyl groups having the formula:

in which each of R_4 and R_5 may be substituents selected from the group consisting of hydrogen, alkyl, alkenyl, alkynyl, and hydroxy-substituted and alkoxy-substituted alkyl, alkenyl, and alkynyl groups, and when R_1 and R_2 together are carbonyl oxygen, R_3 may be an aryl group, including hydroxy and alkoxy and alkyl-substituted aryl; each of R_α and $R_{\alpha'}$ may be substituents selected from the group consisting of hydroxy, alkoxy, carboxy-substituted alkoxy, formoxy, alkanoxy, halogen and polyoxy groups.

4,196,008

AQUEOUS GYPSUM COMPOSITION

Henry K. Kennedy-Skipton, West Kilbride, Scotland, assignor to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 734,355, Oct. 20, 1976, Pat. No. 4,114,384.
This application Jul. 19, 1978, Ser. No. 926,113
Claims priority, application United Kingdom, Nov. 5, 1975, 45925/75
Int. Cl.[2] C04B *11/24*
U.S. Cl. 106—115 **11 Claims**

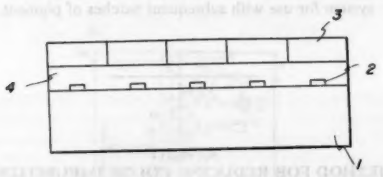
1. A plaster composition for grouting a fixing element in a drillhole in a rock mass, which composition consists essentially of α-gypsum gauged with an aqueous solution containing 0.01 to 3% w/v of a water-soluble carboxymethyl cellulose salt containing sufficient water to render the composition pumpable.

4,196,009

COLOR IMAGING DEVICES HAVING INTEGRAL COLOR FILTER ARRAYS

Thomas W. Martin, Rochester, and M. Akram Sandhu, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 8, 1978, Ser. No. 884,514
Int. Cl.[2] G03F *5/00*; G02B *5/18, 5/22*
U.S. Cl. 430—7 **19 Claims**



1. A color imaging device comprising a planar array of charge-handling semiconductor photosensors having sensing areas sensitive to radiant energy, said sensing areas having coated thereon an adhesive polymeric layer comprising a polyester selected from the group consisting of:

(1) polyesters having recurring carboxylate units of which at least 80 mole percent are terephthalate units, and recurring alkylene units derived from glycols of which at least 40 mole percent are ether alkylene units, with the proviso that either (a) the recurring alkylene units comprise at least 60 mole percent ether alkylene units or (b) either the recurring carboxylate units comprise at least 2 mole percent pyromelliticetetracarboxylate units or at least 10 mole percent of linear aliphatic dicarboxylate units having at least 8 carbon atoms, and that when at least 10 mole percent of the carboxylate units are said linear aliphatic dicarboxylate units, the total of the mole percent of lower aliphatic dicarboxylate units of the recurring carboxylate units plus the mole percent of ether alkylene units of the recurring alkylene units is at least 60 and

(2) polyesters having recurring alkylene units and recurring carboxylate units wherein at least 30 mole percent of the carboxylate units are alicyclic dicarboxylate units and wherein the remaining carboxylate units are nonlinear aromatic dicarboxylate units;

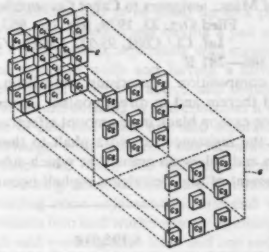
and superimposed on said adhesive polymeric layer, filter means comprising a plurality of radiation intercepting means defining a planar array of filter elements lying in micro-registration with, and along at least one dimension of, the sensing areas of said photosensors and containing a transparent, polymeric layer capable of receiving a dye.

4,196,010

COLOR FILTER ARRAYS AND COLOR IMAGING DEVICES

Mohammad A. Sandhu, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 6, 1978, Ser. No. 913,150
Int. Cl.[2] G03F *5/00*; G02B *5/18, 5/22*
U.S. Cl. 430—7 **15 Claims**



1. In a color filter array containing a planar array of filter elements which comprise a transparent, polymeric layer, at least one of said elements containing at least one heat-transferred dye in said polymeric layer, the improvement wherein:

said polymeric layer comprises an amorphous, solvent-soluble, aromatic polyester having recurring units derived from the condensation residue of a diol and a carbonic acid or a dicarboxylic acid, at least 30 mole percent of the recurring units containing a saturated gem-bivalent radical having a saturated polycyclic three-dimensional structure that includes a saturated bicyclic atomic bridge hydrocarbon ring member.

4,196,011

SELF-HARDENING WATER-SOLUBLE MOLD AND PROCESS FOR PRODUCING THE SAME

Keiichi Koike, Matsudo, Japan, assignor to Hitachi, Ltd., Japan

Filed Jul. 26, 1977, Ser. No. 819,055
Claims priority, application Japan, Jul. 28, 1976, 51/89124; Jul. 28, 1976, 51/89125
Int. Cl.[2] B28B *7/36*
U.S. Cl. 106—38.2 **10 Claims**

1. A self-hardening water-soluble mold consisting essentially of alumina as a main material and one carbonate selected from the group consisting of sodium carbonate and potassium carbonate as a water-soluble binder, whereby the mold can be easily disintegrated and removed from a casting with water.

4,196,012

PAPER COATING COMPOSITIONS

William Windle, Cornwall, England, assignor to English Clays Lovering Pochin & Co., St. Austell, England

Continuation of Ser. No. 664,176, Mar. 5, 1976, abandoned, which is a continuation of Ser. No. 523,855, Nov. 14, 1974, abandoned, which is a continuation of Ser. No. 94,956, Dec. 3, 1970, abandoned, which is a continuation-in-part of Ser. No. 711,536, Mar. 8, 1968, abandoned. This application Nov. 15, 1976, Ser. No. 741,998

Claims priority, application United Kingdom, Mar. 13, 1967, 11780/67

Int. Cl.[2] C08J *3/20*; C09H *11/00*; C09J *3/06*

U.S. Cl. 106—137 7 Claims

1. In a paper coating composition which comprises a dispersion of a pigment in an aqueous medium containing an adhesive, the improvement which comprises employing a pigment which comprises a natural chalk whiting formed from the remains of coccoliths which has been processed so as to contain from 70 to 95% by weight of particles smaller than 2 microns equivalent spherical diameter, not more than 5% by weight of particles larger than 10 microns equivalent spherical diameter and not more than 0.05% by weight of particles larger than 53 microns.

4,196,013

OXIDATION RESISTANT ASPHALT COMPOSITIONS

Eli M. Dannenberg, Mashpee, and Frank R. Williams, Quincy, both of Mass., assignors to Cabot Corporation, Boston, Mass.

Filed Oct. 23, 1978, Ser. No. 953,848

Int. Cl.[2] C08L *95/00*; C09D *3/24*

U.S. Cl. 106—281 R 5 Claims

1. A composition comprising petroleum asphalt having dispersed therein and in direct contact therewith particles of oil furnace carbon black in an amount effective to substantially improve the resistance of said asphalt to thermal and actinic oxidation and below an amount at which substantial physical reinforcement of said petroleum asphalt occurs.

4,196,014

SURFACE-TREATING PAINT FOR SHAPED PLASTIC ARTICLES

Susumu Taniyama, Toyonaka; Hiromitsu Takanohashi, Takarazuka, and Shoichi Inoue, Itami, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Japan

Filed Jun. 19, 1978, Ser. No. 917,025

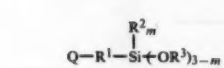
Claims priority, application Japan, Jun. 22, 1977, 52-74109

Int. Cl.[2] C09K *3/00*

U.S. Cl. 106—287.13 6 Claims

1. A surface-treating paint for shaped plastic articles, said paint being the reaction product of

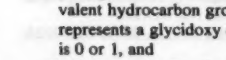
(1) 50 to 95 mole % of an epoxyalkylalkoxysilane of the general formula



(I)

wherein R^1 represents a divalent hydrocarbon group having 1 to 4 carbon atoms, R^2 and R^3 represent a monovalent hydrocarbon group having 1 to 4 carbon atoms, Q represents a glycidoxy or epoxycyclohexyl group, and m is 0 or 1, and

(2) 50 to 5 mole % of a fluorinated alcohol of the general formula



(II)

wherein p represents an integer of 1 to 7, at a reaction temperature of 60° to 120° C. for 5 to 20 hours.

4,196,015

REWETTING SOLUTION AND METHOD FOR ALUMINIZING IMAGE DISPLAY FACEPLATES

Hugo A. Lopez, Glendale Heights, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Aug. 18, 1978, Ser. No. 935,032

Int. Cl.[2] B05D *5/06, 5/12*

U.S. Cl. 106—287.24 4 Claims

1. A solution for rewetting a phosphor-bearing image display faceplate prior to aluminizing consisting essentially of:

(1) an aqueous colloidal dispersion of silica particles, said particles comprising about 0.5 to 1.5 weight percent;

(2) a nonionic surfactant comprising about 0.001 to 0.004 weight percent; and

(3) an acidic pH-lowering substance in an amount sufficient to adjust pH to about 6.2 to 7.8.

4,196,016

GRINDING OF PIGMENTS

Eric Simon, 15 Charleston Park Dr., Ste. 904, Houston, Tex. 77025

Filed Nov. 30, 1977, Ser. No. 856,175

Int. Cl.[2] C09B *47/04*

U.S. Cl. 106—309 10 Claims

1. In salt grinding of pigments, the improvement comprising

(a) milling oversize pigment with an inorganic salt and a conditioner until a predetermined state of comminution is achieved,

(b) dispersing the mixture in an organic liquid which is a solvent for said conditioner, is inert to said pigment and will not dissolve said inorganic salt,

(c) separating the resulting dispersion into a liquid phase comprising a suspension of properly sized pigment in the resultant solution of said organic liquid and conditioner, and a solid phase comprising oversize pigment and said inorganic salt,

(d) returning said solid phase to a subsequent batch of oversize unmilled pigment,

(e) separating said suspension into product pigment and solution of conditioner and organic liquid,

(f) separating said organic liquid from said conditioner, and

(g) returning said organic liquid and conditioner to the system for use with subsequent batches of pigment.

4,196,017

METHOD FOR REDUCING COLOR IMPURITIES IN SUGAR-CONTAINING SYRUPS

James C. Melville, Tracy; Joseph M. Beatty, II, Tustin, and Joe H. Satcher, Jr., Stockton, all of Calif., assignors to Holly Sugar Corporation, Colorado Springs, Colo.

Filed Jan. 29, 1979, Ser. No. 7,024

Int. Cl.[2] C13D *3/08, 3/12, 3/00*

U.S. Cl. 127—41 15 Claims

1. A method for reducing color impurities in sugar-containing syrups comprising the steps of

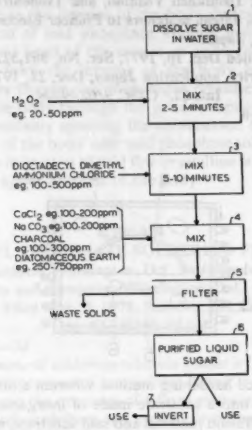
(1) adding to the syrup at about 80° C. an oxidizing bleach at 5–1000 ppm by weight per sugar content of the syrup,

(2) mixing for about 2 to 5 minutes,

(3) then adding thereto a cationic surfactant at 50 to 750 ppm by weight of said sugar content,

(4) mixing for about 5 to 10 minutes,

(5) then adding thereto a defecant and mixing thoroughly, and



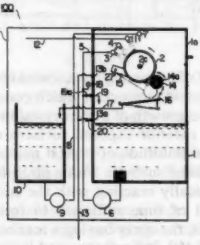
(6) then filtering the solids out to obtain a purified sugar solution.

4,196,018

PROCESS AND APPARATUS FOR WASHING PHOTOSENSITIVE RESIN PRINTING PLATES

Michio Inoko, Koganei; Shinichi Kawatsuji, Fuji, and Takeshi Yamagata, Hachioji, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jul. 11, 1978, Ser. No. 923,702
Claims priority, application Japan, Jul. 18, 1977, 52-85094
Int. Cl.[2] B08B *1/02*
U.S. Cl. 134—6 **16 Claims**



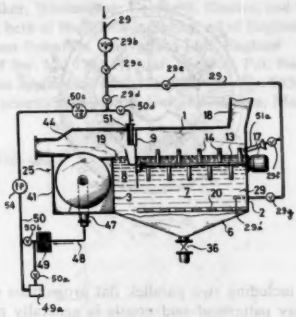
1. A process for washing uncured resin from exposed photosensitive resin printing plates by means of a washing liquid, comprising the steps of: spraying a washing liquid on a photosensitive surface of said exposed resin plate, said plate being attached to a rotary drum on the drum outer surface, and rotating said drum, thereby to remove most of the uncured resin, and thereafter placing a rotating brush in contact with said surface of said resin plate on said rotating drum, and rotating said brush to remove remaining uncured resin.

4,196,019

WASHING APPARATUS FOR BUOYANT MATERIAL

Wolf-Ulrich Kohler, Krefeld, and Clemens Lenzen, Viersen, both of Fed. Rep. of Germany, assignors to Maschinenfabrik Buckau R. Wolf Aktiengesellschaft, Grevenbroich, Fed. Rep. of Germany

Filed Jun. 28, 1978, Ser. No. 919,948
Int. Cl.[2] B08B *3/04, 11/00*
U.S. Cl. 134—104 **15 Claims**



1. Apparatus for washing soiled comminuted products, especially comminuted plastic foils, bands or the like, comprising an elongated container adapted to be filled up to a predetermined level with washing solution and having a pair of opposite end walls and a bottom wall; separating wall means in said container between said end walls and having a lower edge below said predetermined level but above said bottom wall, said separating wall means defining in said container a washing zone between one of said end walls and said separating wall means and a discharge zone between said separating wall means and the other end wall, said discharge zone being shorter than said washing zone; an inlet passage communicating with said washing zone adjacent said one end wall for feeding soiled products into said washing zone; agitating means extending through said washing zone from said one end wall to said separating wall means; discharge means downstream of said discharge zone and comprising a casing adjacent said other end wall and a sieve drum rotatable in said casing about an axis extending transverse to the longitudinal direction of said elongated container and projecting with a minor portion of its circumference upwardly beyond said predetermined level, said other end wall having an upper edge only slightly below said predetermined level, so that the soiled products will pass from the washing zone below said separating wall means and into said discharge zone to rise in the latter and to flow over the upper edge of said other end wall only onto the projecting portion of said sieve drum; a discharge channel for discharging cleaned products and extending from said separating wall means over that discharge zone and said casing with a portion of said sieve drum projecting into said discharge channel; and a washing solution discharge outlet communicating with said casing.

4,196,020

REMOVABLE WASH SPRAY APPARATUS FOR GAS TURBINE ENGINE

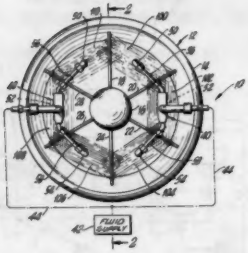
Steven S. Hornak, Monroe; Robert S. Lowdermilk, Shelton, and Robert A. Miller, Bridgeport, all of Conn., assignors to Avco Corporation, Stratford, Conn.

Filed Nov. 15, 1978, Ser. No. 960,909
Int. Cl.[2] B08B *3/02, 9/00*
U.S. Cl. 134—167 R **4 Claims**

1. A wash spray apparatus for use with a gas turbine engine including an intake portion defined by an outer cowling, a central hub, and a plurality of spaced, radially extending struts

interconnecting said hub and cowling, said wash spray apparatus comprising:

a manifold assembly releasably secured to the cowling and including an array of spray nozzles disposed within said inlet, each nozzle being positioned upstream of said struts and disposed intermediate two adjacent struts, the spray flow path of each nozzle being generally aligned with the longitudinal axis of the engine, and with the tip of each



nozzle including two parallel, flat projections such that the spray pattern of said nozzle is generally pyramidal including a generally elongated rectangular base, the longitudinal axis of which is generally perpendicular to the radial axis of the engine inlet, whereby the sprays from said nozzles provide an overlapping wash spray substantially along the entire length of the adjacent struts and the inside surface of the cowling.

4,196,021

PROCESS FOR THE THERMAL TREATMENT OF ALUMINUM ALLOY SHEETS

Jean Bouvaist, and Daniel Ferton, both of Grenoble, France, assignors to Cegedur Societe de Transformation de l'Aluminium Pechiney, France

Filed Apr. 26, 1978, Ser. No. 900,304
Claims priority, application France, Jun. 2, 1977, 77 17476
Int. Cl.[2] C22F 1/04
U.S. Cl. 148—2 **1 Claim**

1. A process for obtaining aluminum-based alloy sheets and plates having improved mechanical properties, wherein particles comprising the insoluble phase $Al_{12}Mg_2Cr$ have an average diameter of between about 800 A and about 1000 A, due to a thermal treatment comprising the successive steps of:

(a) casting a plate having the composition comprising by weight:
zinc 5.2 to 6.2%
magnesium 1.9 to 2.5%
copper 1.2 to 2.9%
chromium 0.18 to 0.25%
iron <0.12%
silicon <0.10%
manganese <0.06%
titanium <0.06%
aluminum balance;

(b) effecting homogenization of the plate by subjecting the plate to a temperature above the melting point of metastable eutectics for a period of about 4 to about 12 hours;

(c) at least hot rolling; and

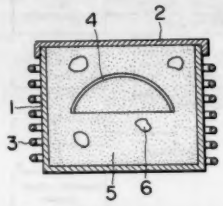
(d) solution heat treating in two stages comprising a first stage at a temperature of between about 465° C. and about 485° C. for a period of about 2 to about 4 hours and a second stage at a temperature of between about 505° C. and about 535° C. for a period of about 30 to about 90 minutes, quenching and tempering.

4,196,022

SURFACE HARDENING METHOD

Teruo Tohma; Toshikazu Yoshino, and Tsunehiro Tsukagoshi, all of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Dec. 16, 1977, Ser. No. 861,322
Claims priority, application Japan, Dec. 21, 1976, 51-152871
Int. Cl.[2] C23C 9/02, 9/04
U.S. Cl. 148—6 **15 Claims**



1. In a surface hardening method wherein a diffusion material is diffused into a substrate made of inorganic material by heating said diffusion material and said substrate, said diffusion material made of an inorganic material different in properties from said substrate, the improvement wherein the step of heating for diffusing said diffusion material is effected in an alkali metal gas atmosphere with the diffusion material in the form of a powder and the alkali metal gas in contact with said substrate.

4,196,023

TREATING AUTOMOBILE BODIES

Arthur J. Rowe, Coulsdon, England, assignor to Carrier Drysys Limited, London, England

Continuation-in-part of Ser. No. 807,666, Jun. 17, 1977, abandoned, which is a continuation-in-part of Ser. No. 561,987, Mar. 25, 1975, abandoned. This application Dec. 20, 1977, Ser. No. 862,722
Claims priority, application United Kingdom, Mar. 25, 1974, 13183/74
Int. Cl.[2] C23F 7/10
U.S. Cl. 148—6.15 R **13 Claims**

1. The method of preparing an automobile body for painting by an electro-deposition process, which comprises the steps of:

(a) initiating the growth of a fine crystalline phosphate structure on the exterior exposed surfaces of the automobile body from a multitude of crystal nuclei by spraying said exterior exposed surfaces with a phosphate solution capable of chemically reacting with the surfaces of the body for a period of time sufficient to form said phosphate crystal nuclei, the spray having a maximum droplet size in the order of 100–250 microns and being effected at high energy so as to give an impact velocity on the exterior body surfaces of at least 7.5 m/sec;

(b) immediately immersing the body roof uppermost in a tank containing phosphate solution to a level about that of the bottom of the window openings and maintaining a flow of said solution relative to the exterior of the body for a time sufficient to complete the formation of said fine crystalline structure on the immersed exterior sections of the body to give a substantially uniform surface density for said fine crystalline structure of between 10^5 and 10^6

crystals/cm^2 and a coating weight of between 1.5 and 2.0 gm/m^2;

(c) creating in the interior of the body during immersion a static head of said phosphate solution measured against the normal level of the stream so as to cause a flow of solution from the interior of the body to the outside thereof by flooding solution under pressure into the interior of the body through the window openings; and

(d) simultaneously spraying the unimmersed exterior upper portions of the body with said phosphate solution to complete the formation of said fine crystalline structure on the exterior upper portions of the body.

4,196,024

ALKYL PHOSPHATE SOLDERING FLUXES

William G. Kenyon, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 2, 1978, Ser. No. 957,232
Int. Cl.^{2} B23K *35/34*
U.S. Cl. 148—23 **10 Claims**

1. In a process of soldering wherein solder is fused to a metal surface, the improvement comprising fusing the solder to the metal surface in the presence of a flux consisting of phosphate compounds selected from the group consisting of monoalkyl phosphates, dialkyl phosphates, monoalkyl ammonium monoalkyl phosphates, dialkyl ammonium monoalkyl phosphates, trialkyl ammonium monoalkyl phosphates, monoalkyl ammonium dialkyl phosphates, dialkyl ammonium dialkyl phosphates, trialkyl ammonium dialkyl phosphates, and mixtures thereof, and wherein the alkyl groups of said phosphates contain 4–20 carbon atoms.

4,196,025

HIGH STRENGTH DUAL-PHASE STEEL

Richard G. Davies, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Nov. 2, 1978, Ser. No. 957,375
Int. Cl.^{2} C21D *7/14*
U.S. Cl. 148—36 **6 Claims**

1. A hot-formed heat treated dual-phase sheet steel composition, consisting of 0.05–1.15% carbon, 0.25–1.0% silicon, 0.55–1.6% manganese, 0–0.15% vanadium, less than 0.2% molybdenum and 0.3–0.5% chromium, the remainder iron, said composition being particularly characterized by about 30% volume fraction of martensite uniformly dispersed throughout a fine grained ferrite matrix devoid of carbon said ferrite matrix being crystallized as a result of heating, said composition exhibiting a tensile strength in excess of 110 ksi and an elongation of at least 14% at a tensile strength level of 140 ksi and 12% at 150 ksi.

4,196,026

DONOR FREE RADICAL EXPLOSIVE COMPOSITION

Franklin E. Walker, 15 Way Points Rd., Danville, Calif. 94526, and Richard J. Wasley, 4290 Colgate Way, Livermore, Calif. 94550

Filed Sep. 4, 1975, Ser. No. 610,165
Int. Cl.^{2} C06B *25/34, 25/04, 25/02, 23/00*
U.S. Cl. 149—46 **14 Claims**

1. A composition of matter comprising:

(1) a major portion of a metastable explosive capable of being detonated by a mechanical, thermal or electrical shock and having a detonation velocity from 1,500 to 10,000 meters per second, and

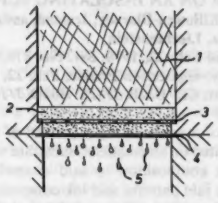
(2) from 0.01 to 20 weight percent of a donor additive, or combination of donor additives, which is (i) capable of releasing low molecular weight free radicals or ions having a molecular weight between 1 and 200 during the initiation of said explosive, (ii) not an explosive, and (iii) is selected from the group consisting of C_2 to C_{12} tetraalkyl phosphonium nitrates, C_4 to C_{14} organic peroxides, C_1 to C_{10} hydrocarbyl amines, C_4 to C_{12} organic persulfates, C_1 to C_{20} organic boron compounds, C_1 to C_7 hydrocarbyl aldehydes, C_2 to C_{16} organic azo compounds, C_1 to C_{10} hydrocarbyl monohalides, C_6 to C_{10} quinones, C_6 to C_{16} hydroquinones, ammonium persulfate, alkali metal persulfate and mixtures thereof.

4,196,027

METHOD OF MAKING FILTER ELEMENTS FOR GAS OR LIQUID

Brian Walker, Washington; George S. Hunter, and Susanne P. Hunter, both of Houghton-le-Spring, all of England, assignors to Process Scientific Innovations Ltd., England

Division of Ser. No. 779,417, Mar. 18, 1977, Pat. No. 4,111,815.
This application Jun. 13, 1978, Ser. No. 915,339
Claims priority, application United Kingdom, Mar. 26, 1976, 12228/76
Int. Cl.^{2} B32B *3/10*
U.S. Cl. 156—62.2 **10 Claims**



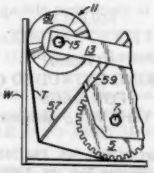
1. A method of forming a filter element comprising the steps of dispersing a mass of fibres in a liquid to form a slurry, mounting an apertured fibre supporting sheet a predetermined distance above and substantially parallel to a substantially horizontal filter surface, the open areas of said supporting sheet being at least 30% of the total area of said sheet, passing said liquid through said sheet to drain through said filter surface leaving said fibres to build up on said surface, up to and through said supporting sheet to a predetermined distance above said supporting sheet, removing the collected fibres containing said supporting sheet from said filter surface, and bonding the fibres to one another and to said supporting sheet by means of a synthetic resin.

4,196,028

TAPING TOOL

Harold R. Mills, 2636 Flintridge Pl., and Robert F. Mills, 1305 Newsom, both of Ft. Collins, Colo. 80521

Filed Aug. 26, 1977, Ser. No. 827,985
Int. Cl.^{2} B32B *31/00*; B44C *7/04, 7/06*; E04F *13/00*
U.S. Cl. 156—71 **12 Claims**



1. A method for applying a continuous strip of tape to wallboard and the like, said method comprising the steps of:

(a) applying an adhesive material to at least one side of the tape,

(b) running the tape along a path in a forward direction about a portion of a first roller means having a first axis of rotation and linearly to and about a portion of a second

roller means having a second axis of rotation fixed in relationship to said first axis,

(c) pressing the tape between the first roller means and the wallboard with said at least one side of the tape against the wallboard,

(d) moving the first roller means along said wallboard,

(e) pressing the tape between the second roller means and the wallboard while maintaining pressure between the first roller means and the wallboard,

(f) moving the first roller means away from the wallboard while maintaining the fixed relationship between said first and second axes of rotation, and

(g) projecting a retractable blade into and cutting the tape at a location on said tape path between said first roller means and said second roller means.

4,196,029

PROCESS FOR DEPOSITING A CONDUCTING METAL LAYER ON AN INSULATING SUPPORT

Yves E. Privas, Killowen-Blarney, Ireland, assignor to Panoduz Anstalt, Vaduz, Liechtenstein

Filed Feb. 22, 1978, Ser. No. 879,855

Claims priority, application France, Feb. 22, 1977, 77 05050

Int. Cl.[2] B32B *31/26*; B05D *3/10*

U.S. Cl. 156—89 **5 Claims**

1. A method of manufacturing a pattern of electro-conductive metal deposited on an enameled substrate which comprises applying an ink composition to said enameled substrate in accordance with said pattern, said ink composition comprising a second enamel and a metal-containing powder receptive to electroless plating, said second enamel having a melting point no greater than the softening point of the enamel of said enameled substrate and said metal-containing powder being present in an amount sufficient to provide from 60 to 90% by weight of said ink composition after baking; baking said composition; treating said baked composition so as to expose particles of said metal containing powder; and subjecting the baked, exposed composition to electroless plating.

4. A method of manufacturing a pattern of electro-conductive metal deposited on an enameled substrate which comprises applying an ink composition to a water disintegrable surface in accordance with said pattern, said composition comprising a second enamel and a metal-containing powder receptive to electroless plating, said second enamel having a melting point no greater than the softening point of the enamel on said substrate and said metal-containing powder being present in an amount sufficient to provide from 60 to 90% by weight of said composition after baking; drying said ink composition, coating said dried composition and said water disintegrable surface with a sublimable varnish film; disintegrating said water disintegrable surface whereby said dried composition remains on said film; applying said film to said enameled substrate; baking said enameled substrate with the applied film whereby said film sublimes; treating said baked composition so as to expose particles of said metal-containing powder; and subjecting the baked exposed composition to electroless plating.

4,196,030

METHOD OF MAKING EXTRUDED CONSTRUCTION FOR BAGS

Steven Ausnit, New York, N.Y., assignor to Minigrip, Inc., Orangeburg, N.Y.

Continuation-in-part of Ser. No. 754,745, Dec. 27, 1976, abandoned. This application Feb. 16, 1978, Ser. No. 878,610

Int. Cl.[2] B65D *35/08*

U.S. Cl. 156—91 **22 Claims**

1. A method of making an extruded construction for bags, comprising:

forming in a one piece extrusion a flexible collapsibly foldable thin wall closure web area joined at its opposite ends to proximal ends of a pair of pull flange portions of substantial length, and as part of the extrusion forming separable resiliently flexible interlocking complementary fastener profiles adjacent to said proximal ends;

collapsibly folding the closure web area away from the flange portions and the profiles;

coupling the fastener profiles together;

and enveloping the collapsibly folded closure web area within bag body side wall panels having end parts joined to the extrusion adjacent to the profiles.

4,196,031

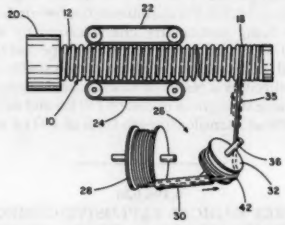
METHOD OF MAKING A PREFORMED SEMIRIGID PLASTIC HOSE WRAPPED WITH A WIRE SPIRAL

James M. Lalikos, Springfield; Harold K. Waite, East Longmeadow, and Kenneth E. Lefebvre, Hampden, all of Mass., assignors to Titeflex Corporation, Springfield, Mass.

Filed Mar. 10, 1978, Ser. No. 885,389

Int. Cl.[2] B32B *1/08*

U.S. Cl. 156—143 **10 Claims**



1. A process for making a wire wrapped, semirigid, convoluted hose, comprising the steps of:

(a) forming a semirigid plastic hose having at least an outside surface with a spiral convolution thereon;

(b) supplying a coil of wire stock mounted concentrically about an axis of rotation;

(c) pulling said wire from said coil at an angle with respect to the plane in which the turns of said coil lie;

(d) wrapping said wire about a forming spool of a predetermined diameter to impart a spiral coil form of a predetermined diameter to said wire;

(e) pulling wire from said coil forming spool at an angle with respect to the plane in which the turns of said spiral coil lie on said spool;

(f) feeding said wire from said forming spool through a radius guide toward said hose; and

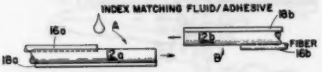
(g) wrapping the formed spiral coil of said wire about the convolutions of said hose.

4,196,032

SPLICE FOR OPTICAL RIBBON HAVING ELONGATED STRAIN RELIEF ELEMENTS IN THE RIBBON AND METHOD OF SPLICING THE SAME

Frederick C. Eggleston, Decatur, Ill., assignor to Essex Group, Inc., Fort Wayne, Ind.

Filed Mar. 22, 1978, Ser. No. 889,090
Int. Cl.[2] B32B *17/04*; C03C *25/00, 27/10*; G02B *5/14*
U.S. Cl. 156—158 6 Claims



1. A method of gang splicing a pair of continuous, indefinite length, optical ribbons each having at least one optical channel located in a substantially coplanar relationship between two elongated strain relief members, comprising the steps of:

holding said strain relief members of each ribbon in abutting lateral contact near the end of said optical ribbons;

preparing the adjoining ends of each said optical ribbon so that said strain relief members extend beyond the end of said optical channels; and

bringing the adjoining ends of said optical ribbons together so that corresponding optical channels on the two optical ribbons are axially abutting one another and the adjacent strain relief members on one of said optical ribbons are in overlapping abutting contact with corresponding adjacent strain relief members on the other optical ribbon to form an interstice in which said corresponding optical channels are located.

4. A splice connection for optically connecting the optical channels in a pair of continuous, indefinite length optical ribbons of the type having alternating co-planar, optical channels and round strain relief members of larger diameter than the optical channels, comprising:

means at the end of each ribbon for positioning and holding the end portion of said strain relief members in abutting lateral contact with one another to form a longitudinal groove between abutting strain relief members, said strain relief members extending beyond the ends of said optical channels and the end of each optical channel being situated in the groove formed by two abutting strain relief members, said means for positioning and holding being adapted to become an integral part of said splice connection; and

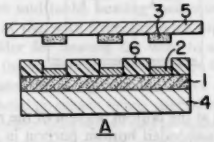
means for uniting the ends of said optical ribbons so that the optical channels of said ribbons are in abutting axial contact with one another, and the ends of the strain relief members of the ribbons are in overlapping contact with one another so that the end portions of adjoining optical channels are located in the interstice formed by two abutting strain relief members of one ribbon and the corresponding two abutting strain relief members of the other ribbon.

4,196,033

PROCESS FOR PRODUCING DECORATIVE SHEETS

Eisuke Arai, Koganei; Kuniaki Kamei, Kodaira; Kinji Matushima, Tokorozawa, and Matsuo Hirakawa, Tokyo, all of Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 6, 1978, Ser. No. 883,545
Claims priority, application Japan, Mar. 8, 1977, 52/25230; Jul. 29, 1977, 52/91594
Int. Cl.[2] B05D *5/02*
U.S. Cl. 156—196 32 Claims



1. A process for producing decorative sheets having a thermosetting resin surface, which process includes in sequence

(1) forming a pattern on a paper for decorative use with an ink containing a vehicle resin and a curing inhibitor for a thermosetting resin;

(2) impregnating the entire paper for decorative use including the pattern with said thermosetting resin to form an impregnated paper wherein a film of still uncured thermosetting resin is formed over the pattern;

(3) assembling a laminated structure by so superposing the impregnated paper on a base material that the surface of the paper bearing the pattern will become the outer surface and further placing a planar shaping member on the paper;

(4) subjecting the laminated structure to heating and pressing to cause the thermosetting resin at parts not contacted by the curing inhibitor in the pattern to cure, leaving the thermosetting resin contacted by the curing inhibitor in the pattern in still uncured state; and

(5) peeling off the planar shaping member, under heat and after the termination of the pressing, thereby to form concavities in the film of the thermosetting resin by removing at least some of the still uncured resin due to adhesion of the uncured resin to the planar shaping member thus peeled-off, wherein the improvement comprises:

selecting for the vehicle resin in the ink a resin having releasability from the thermosetting resin and, prior to step (2), causing the vehicle resin in the pattern formed in step (1) to harden, whereby the still uncured resin after step (4) is substantially restricted to the parts of the thermosetting resin directly over the pattern, and in step (5) substantially all of said uncured resin is released from the hardened vehicle resin and adheres to the planar shaping member.

4,196,034

METHOD OF MAKING A POUCH USABLE AS A CUP

Kinichi Kimura, 21-11, 3-chome, Akatsukashinmachi, Itabashi-ku, Tokyo, Japan

Filed Mar. 2, 1977, Ser. No. 773,665
Claims priority, application Japan, May 13, 1976, 51-54530
Int. Cl.[2] B31B *21/00*; B65D *33/18*; B32B *31/04*
U.S. Cl. 156—204 20 Claims

1. A method of producing a pouch usable as a cup, comprising:

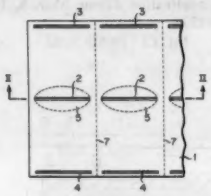
providing an opening at the central portion of a flat outer sheet having a reasonable rigidity and flexibility, said opening being interior of the edges of said outer sheet;

then bonding the major portion of an inner sheet of greater flexibility than said outer sheet to a major portion of the inner face of said outer sheet, said bonding being not effected only over a minor portion of said inner sheet

which consists of a given area around said previously provided opening of said outer sheet;

then folding said bonded sheets at the center and on a line extending through said opening so that the folded halves of said bonded sheets are folded toward each other with said inner sheet interior of said outer sheet; and

then bonding together the periphery of the folded bonded



sheets except at the bottom portion of the resultant pouch to define an unbonded bottom portion in the vicinity of the edges of said outer sheet which define said previously provided opening, such that at said unbonded bottom portion said inner sheet is not bonded to said outer sheet and only the minor portion of said inner sheet not bonded to said outer sheet constitutes the bottom of the resultant pouch.

4,196,035

APPARATUS FOR APPLYING STRIPS TO COATED WEB MATERIAL

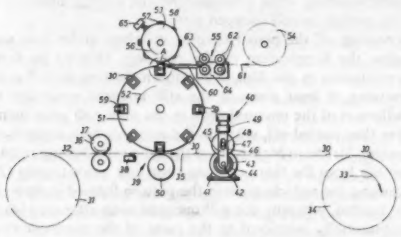
Wilhelm Reil, Bensheim-Auerbach, Fed. Rep. of Germany, assignor to Tetra Pak Development S.A., Lausanne, Switzerland

Filed May 10, 1978, Ser. No. 904,509

Claims priority, application Fed. Rep. of Germany, May 12, 1977, 2721333

Int. Cl.[2] **B32B** *31/00*; **B65H** *25/00*; **B31B** *17/02*

U.S. Cl. 156—361 **8 Claims**



1. An apparatus for applying plastics strips (30) to an optionally partially perforated supporting material web (32) which has been made impervious to liquid through plastics coating of the entire surface area and in which the web is conveyed from a wind-off reel to a wind-up reel or to a packaging machine, characterised by an application station (39), means for passing and conveying the web (32) with the plastics coating continuously through the application station, a lower drum (51) on the side of the coated supporting material web (32) to which is sealed the plastics strip (30), means for driving the lower drum (51) in rotary manner, means for matching the speed of the material web (32) and the circumferential speed of the lower drum (51), fixed heating jaws (59) on and at an angular distance around the circumference of the lower drum (51) which on the side of the web (32) can be moved past in contact engagement with a back-pressure roller (50) rotatably fitted to the other side of the web, means (53, 54) for applying the plastics strip (30) to the heating jaws (59), the heating jaws (59) supplying the plastics strips (30) at a high temperature but which is below the extruder temperature, and supplying the plastic strips (30) to the plastics coating side of the web (32) at the same running speed and during the continuous movement of web (32) to apply the strips (30) to the web (32) by pressure sealing in such a way that in the longitudinal direction of the web (32) the strips (30) are spaced from one another.

4,196,036

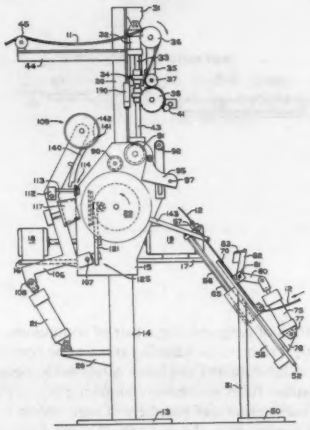
TIRE BEAD RING ASSEMBLY MACHINE

Ronald E. Allen, and David W. Cusimano, both of Tuscaloosa, Ala., assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Aug. 21, 1978, Ser. No. 935,297

Int. Cl.[2] **B29H** *17/32, 17/34*

U.S. Cl. 156—422 **10 Claims**



1. A tire bead ring assembly machine for wrapping a filler gum and flipper cloth into and around a tire bead ring comprising support means, bead ring support means mounted on said support means for holding and rotating a bead ring, filler gum feed means mounted on said support means for delivering a predetermined length of filler gum to the outer periphery of said bead ring for attachment thereto as said bead ring rotates, flipper cloth feed means operatively connected to said support means to deliver a predetermined length of flipper cloth to the underside of said bead ring, drive means connected to said bead ring support means for rotating said bead ring, and folding means mounted on said support means for cooperative action with said bead ring support means for folding said flipper cloth about said bead ring and said filler gum as said bead ring rotates to encase said bead ring and filler gum with said flipper cloth.

4,196,037

APPARATUS FOR MANUFACTURING CYLINDRICAL TUBES

Rolf Berg, Djursholm, Sweden, assignor to Aktiebolaget Statens Skogindustrier, Stockholm, Sweden

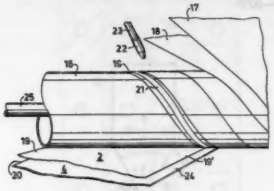
Division of Ser. No. 742,154, Nov. 15, 1976, Pat. No. 4,087,299, which is a continuation of Ser. No. 557,846, Mar. 12, 1975, abandoned. This application Oct. 4, 1977, Ser. No. 839,466

Int. Cl.[2] **B65H** *81/00*

U.S. Cl. 156—429 **5 Claims**

1. Apparatus for manufacturing cylindrical tubes of paper of the type having an inner, dense layer of plastics foil material, said apparatus comprising press means, first guide means for guiding a plastics foil web to said press means, second guide means, one surface of said paper web being provided with a layer of plastics material which becomes tacky when heated, said first and second guide means being positioned in relation to each other so that the plastics foil web and the paper web are placed in superposed relationship at said press means with a

first side edge portion of the plastics foil web projecting at a substantially constant width beyond an adjacent side edge of the paper web, heating means positioned adjacent said paper web at a position prior to said press means for heating the plastics material through said paper web to a tacky state, the tacky surface of said paper web being pressed against said plastics foil web by said press means, a rotatable mandril, means for guiding said paper web and said plastics foil web onto said mandril so as to wind said paper web and said plastics



foil web helically on said mandril with the plastics foil web adjacent the forming surface of the mandril and with said first side edge portion of said plastics foil web contacting a second side edge portion of said plastics foil web opposite said first edge portion, adhesive supply means arranged to provide a string of molten adhesive to said first side edge portion on said mandril on the side facing away from said forming surface of said mandril, and means for cooling said forming surface to a temperature so as to maintain the foil layer nearest to said mandril at a temperature below the melting point of the foil.

4,196,038

DEVICE FOR EMBEDDING A METALLIC ANTENNA WIRE IN PLASTIC SHEET

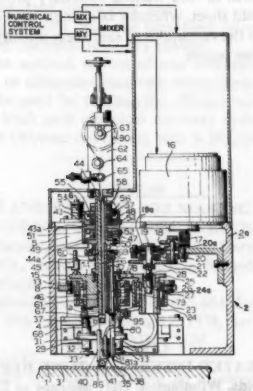
Kenji Chiba, Tokyo, Japan, assignor to Central Glass Co., Yamaguchi, Japan

Continuation-in-part of Ser. No. 626,444, Oct. 28, 1975, abandoned, and a continuation-in-part of Ser. No. 573,159, Apr. 30, 1975, abandoned. This application Dec. 27, 1977, Ser. No. 864,442

Claims priority, application Japan, Apr. 30, 1974, 49-49024; Oct. 31, 1974, 49-132844[U]

Int. Cl.[2] B32B *31/00*

U.S. Cl. 156—433 **3 Claims**



1. A device for embedding a metallic antenna wire in a sheet of thermoplastic material comprising a mounting table for mounting the sheet of thermoplastic material thereon, a guide head positioned above said table, guide head moving means coupled to said guide head for moving said guide head in any direction in a plane parallel to said surface of said table, a pressure roller on said guide head for pressing the wire against the sheet as the guide head moves parallel to the table with a force sufficient, when the thermoplastic material is plasticized, to embed the wire in the thermoplastic material, said pressure roller having a shallow groove in the periphery thereof for guiding the metallic antenna wire therearound, a holding roller resiliently engaging the lower portion of the peripheral surface of said pressure roller at a point spaced from the point closest to said table in the direction from which the metallic wire is guided toward said table for holding said metallic wire against said pressure roller, wire supplying means on the guide head consisting of a guide shaft and a supply bobbin for supplying the metallic antenna wire to the pressure roller in a direction perpendicular to said table, heating means on the guide head along the path of the wire from the wire supplying means to the pressure roller for heating the wire to a temperature for plasticizing the thermoplastic material when the pressure roller presses the heated wire against the sheet of thermoplastic material, said heating means being spaced along the path of said metallic antenna wire before said pressure roller relative to the direction of movement of the wire sufficiently far to avoid directly heating said pressure roller, a cutter mounted on said head for movement relative to said head toward and away from said table, said cutter being positioned adjacent said pressure roller in a direction from said pressure roller in which the wire which has been pressed into the sheet trails away from the pressure roller, cutter actuating means on said head coupled to said cutter for moving said cutter against said table for cutting the wire and retracting it from the table when the wire has been cut, said wire supplying means, said pressure roller and said cutter being mounted on said head for rotation relative to said head around said wire as the axis of rotation, and drive means coupled to said wire supplying means, said pressure roller and said cutter and to which said head moving means is coupled for rotating said wire supplying means, said pressure roller and said cutter around said axis in response to the changes in direction of said guide head in the movement of said head parallel to the table for always orienting said pressure roller in the direction in which said head is moving and orienting said cutter for trailing said pressure roller relative to the direction in which the head is moving.

4,196,039

APPARATUS FOR FASTENING A STABILIZING ARRANGEMENT ON A CONTAINER

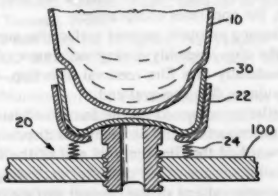
Kjell M. Jakobsen, Hjallese, Denmark, assignor to Aktiebolaget Platmanufaktur AB, Malmo, Sweden

Continuation-in-part of Ser. No. 793,737, May 4, 1977, abandoned. This application Jul. 27, 1978, Ser. No. 928,539

Claims priority, application Sweden, May 10, 1976, 7605265

Int. Cl.[2] B32B *31/00*; B23K *1/06*

U.S. Cl. 156—580.1 **9 Claims**



1. Apparatus for welding a stabilizing arrangement of plastic material on a container of plastic material, said apparatus comprising supporting means for receiving and carrying a stabilizing arrangement to be welded to the bottom of a container, gripping means for pressing a container against the stabilizing arrangement in the supporting means, and ultrasonic welding means applicable to said stabilizing arrangement in the region

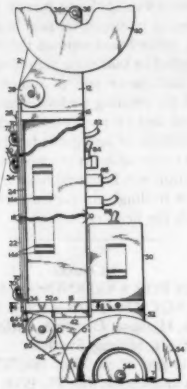
where the stabilizing arrangement is in contact with the container, for welding the stabilizing arrangement to the container, said supporting means comprising an outer beaker-shaped ring corresponding to the outside dimensions of the stabilizing arrangement, and an inner tubular member including an end portion adapted for engaging the middle portion of the bottom of the stabilizing arrangement, said tubular member having an opening for slidably receiving the welding means so as to enable the welding means to bear against the middle portion of the bottom of the stabilizing arrangement.

4,196,040

APPARATUS FOR REMOVING REPRINT PHOTOGRAPHIC FILMS FROM A CARRIER STRIP

Stephen R. Houck, Amity, Oreg., assignor to Byers Photo Equipment Co., Inc., Portland, Oreg.

Filed Feb. 21, 1978, Ser. No. 879,260
Int. Cl.[2] B32B *35/00, 7/12*
U.S. Cl. 156—584 **9 Claims**



1. Apparatus for removing a plurality of photographic films from an assembly of films secured adhesively along one of their longitudinal edges to an elongated, flexible carrier strip, whereby the central portions of the films are spaced from the carrier strip, the apparatus comprising:

(a) a frame having an outer support surface for supporting the film and the strip assembly during movement of the assembly longitudinally in a film-removal direction, the support surface having a film-removal end,

(b) a film deflector mounted on the frame and having a film-engaging outer surface and an inner end disposed longitudinally rearward of the film-removal end of the support surface, the outer surface of the deflector extending forwardly of the film-removal end of the support surface of the frame angularly outward with respect to the plane of the support surface of the frame,

(c) the film deflector being arranged to engage only the film component of the film and strip assembly,

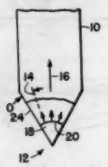
(d) the film-removal end of the support surface of the frame laterally adjacent the deflector forming a carrier strip bending edge for separating the carrier strip from the films.

4,196,041

SELF-SEEDING CONVERSION OF POLYCRYSTALLINE SILICON SHEETS TO MACROCRYSTALLINE BY ZONE MELTING

Aslan Baghdadi, and Richard W. Gurtler, both of Mesa, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 656,556, Feb. 9, 1976, abandoned. This application Apr. 7, 1977, Ser. No. 785,485
Int. Cl.[2] B01J *17/08, 17/20;* **C01B** *33/02*
U.S. Cl. 156—620 **3 Claims**



1. A self-seeding process for converting an unsupported, substrate-free polycrystalline semiconductor silicon sheet to a macrocrystalline semiconductor silicon sheet, which comprises:

(a) forming a region of said sheet having a small width compared to the width of the remainder of said sheet,

(b) heating said small width region in an oxidizing atmosphere to form a molten zone in said small width region of said sheet,

(c) allowing a portion of said molten zone to solidify into a seed crystal of the semiconductor silicon material substantially coextensive with the small width of said region at the portion of the molten zone so solidified,

(d) expanding and axially moving the molten zone to encompass the full width of the sheet, and continuing axially moving moving the molten zone along the remainder of said sheet,

(e) allowing said sheet to solidify successively as said molten zone passes along it, said molten zone having a trailing boundary which is arcuate shaped with a centrally located portion of said trailing boundary extending further along said sheet in the direction of travel of said molten zone than portions of said trailing boundary proximate to the edges of said sheet, whereby said single seed crystal propagates into the remainder of said sheet through which said molten zone passes.

4,196,042

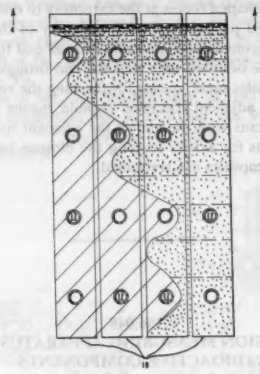
CORRUGATED INTERFACE ZONE REFINER

Philip J. Rennolds, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 14, 1978, Ser. No. 896,431
Int. Cl.[2] B01J *17/14, 17/16*
U.S. Cl. 156—616 R **6 Claims**

1. A zone-melting process that includes forming a corrugated freezing interface between a molten zone and a solid zone in a sample in a container traversed by a plurality of heat

transfer surfaces adapted to internally heat and/or cool the sample, and passing said freezing interface along the axis of the



container, wherein the average angle of a facet of the corrugation from the container axis is from about 5° to about 30°.

4,196,043

KRAFT PULP BLEACHING AND RECOVERY PROCESS

Rudra P. Singh, Ridley Park, Pa., assignor to Scott Paper Company, Philadelphia, Pa.

Continuation of Ser. No. 390,324, Aug. 21, 1973, abandoned, which is a continuation of Ser. No. 100,454, Dec. 21, 1970, abandoned. This application Oct. 21, 1974, Ser. No. 516,737

Int. Cl.[2] D21C *9/16*

U.S. Cl. 162—30 K **8 Claims**

1. In a method of kraft wood pulping including a kraft chemical recovery system and a kraft wood pulp bleaching operation, the improvement which comprises bleaching the kraft wood pulp by a sequence of treatments comprising:

from one to about three treatments with ozone;

a final treatment with an alkaline peroxide solution;

separating the treatments with alkaline extractions;

recycling effluent from the alkaline extractions and alkaline peroxide treatment to reduce the fresh water requirements of the bleaching operations; and

introducing effluent from the bleaching operation into the kraft pulp chemical recovery system;

wherein the method is free of any treatments employing chlorine or chlorine-containing compounds and;

whereby the need for treating the effluent being introduced into the kraft pulp chemical recovery system for the removal of chlorine containing salts is eliminated.

4,196,044

PRODUCT AND PROCESS FOR MAKING A CREPED AND CALENDERED CELLULOSIC ELECTRICAL PAPER

Frank L. Mussoni, Sudbury, Mass., and Gary A. Withrow, Erlanger, Ky., assignors to Dennison Manufacturing Company, Framingham, Mass.

Continuation-in-part of Ser. No. 655,654, Feb. 5, 1976, abandoned. This application May 12, 1978, Ser. No. 905,266

Int. Cl.[2] D21H *5/24*

U.S. Cl. 162—112 **17 Claims**

1. A process for manufacturing an electrically insulating paper product, comprising the steps of

(a) moistening a cellulosic base paper member having a density of at least about 0.75 gm/cm^3 and a Gurley densometer value in the range of about 500–1500 seconds;

(b) creping said paper base member to increase the mass per unit area to form an intermediate member; and

(c) calendering the intermediate member to increase the mass per unit volume to at least or greater than that of said base member without degradation such that the Gurley densometer value has a range of about 1000–10,000 seconds and wherein the calendered member has an elongation of at least about 10%.

4,196,045

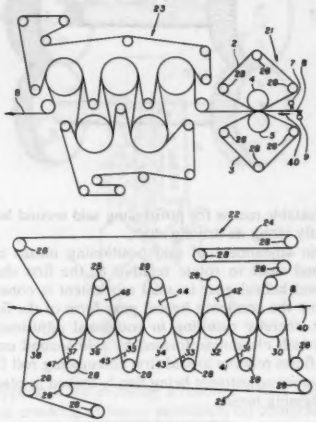
METHOD AND APPARATUS FOR TEXTURIZING AND SOFTENING NON-WOVEN WEBS

William L. Ogden, Janesville, Wis., assignor to Beloit Corporation, Beloit, Wis.

Filed Apr. 3, 1978, Ser. No. 892,823

Int. Cl.[2] D21F *3/04*

U.S. Cl. 162—117 **11 Claims**



1. A method of texturing a non-woven web whereby the web attains a breaking length strength of about 200 meters or more, a bulk of about 5.5 cm^3/g or more and a softness of about 25–35 g or less, HOM, comprising the steps:

1. passing the web in contact with at least one texturing screen member between a pair of nipped rolls when the web has a moisture content of between about 40%–80% to wet texture the web;
2. drying the web to substantially air dry;
3. passing the web between a pair of nipped rolls while interposed between a pair of texturing wire screens a plurality of times between about 3–14 passes at a roll nip pressure each time less than about 35 PLI.

4,196,046

ADJUSTER FOR CORRUGATING ROLLS

Ronald J. McConnel, Seattle, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.

Filed Jun. 12, 1978, Ser. No. 914,655

Int. Cl.[2] B31F *1/26*; B29C *17/02*; F16H *55/18*

U.S. Cl. 162—362 **3 Claims**

1. In combination with a corrugating machine of the type wherein a pair of rolls, each having longitudinally fluted lateral surfaces, are arranged so that the flutes of said rolls intermesh and said rolls, rotating about their longitudinal axes, upon receiving a paper web between them, presses a continuous series of corrugations into said paper as it passes therethrough, the improved arrangement for adjusting corrugating roll flute backlash clearances, during corrugating machine operation, comprising:

a first longitudinally fluted corrugating roll;

a first driving shaft upon which said roll is fixed for longitudinal rotation;

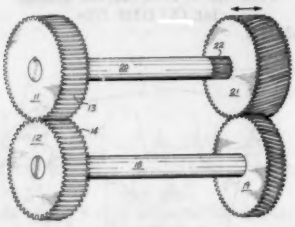
a first helical gear fixed to the first shaft, spaced axially from the first corrugating roll;

a motor means for driving said first helical gear;

a second longitudinally fluted corrugating roll, intermeshing with said first corrugating roll;

a second driving shaft, said second shaft arranged substantially parallel to said first shaft;

a second helical gear, splined onto said second shaft so that the second helical gear is free to move axially upon said shaft but not circumferentially with respect to said shaft, said second helical gear intermeshing with said first helical gear and spaced axially from the second corrugating roll; and



an adjustable means for positioning said second helical gear axially along its driving shaft,

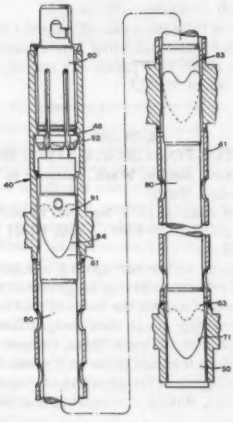
wherein adjustment of said positioning means causes the second shaft to rotate relative to the first shaft as the second helical gear in axial movement is constrained to follow the confining helical gear form of the first helical gear, thereby resulting in rotational adjustment of the back-lash clearances formed by said second corrugating roll flutes relative to said first corrugating roll flutes, said clearance adjustment being firmly locked in place by said positioning means.

4,196,047

IRRADIATION SURVEILLANCE SPECIMEN ASSEMBLY

Jerry W. Mitchem, Bedford; David D. Kalen, Lynchburg, and Francis C. Klahn, Madison Heights, all of Va., assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Feb. 17, 1978, Ser. No. 878,955
Int. Cl.[2] G21G *1/00*
U.S. Cl. 176—15 **7 Claims**



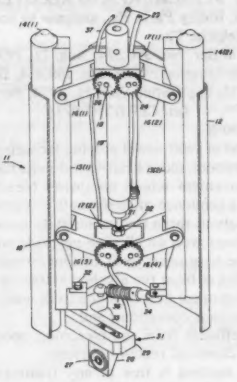
1. A surveillance specimen assembly for housing and supporting irradiation specimens within a nuclear reactor which comprises: an elongated holder tube having perforations, an end plug at one end of the holder tube, and closure means at the opposite end of the holder tube; supporting means for connecting the holder tube with the reactor; a plurality of elongated specimen capsules, each having opposite end fittings including a V-shaped recess at the extremity of one end fittings and a V-shaped projection at the extremity of the other end fitting; the specimen capsules being housed end to end within the holder tube oriented such that the end fittings of adjacent specimen capsules mesh; means for meshing the end plug with the end of the adjacent specimen capsule; means for meshing the closure means with the end of the adjacent specimen capsule; and means for axially loading the closure means so that the specimen capsules are restrained.

4,196,048

CORROSION MEASURING APPARATUS FOR RADIOACTIVE COMPONENTS

Franklin D. Qurnell, San Jose, and George A. Sauer, Campbell, both of Calif., assignors to General Electric Company, San Jose, Calif.

Filed Dec. 12, 1977, Ser. No. 859,318
Int. Cl.[2] G21C *17/00*
U.S. Cl. 176—19 R **16 Claims**



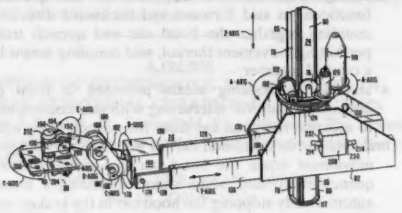
1. Apparatus for detecting the thickness of a non-electrically conductive film such as corrosion product at selected areas on the internal surface of a radioactive, electrically conductive component submerged in a body of radiation shielding fluid, comprising: a probe including a pair of substantially parallel, spaced, elongated guide members; selectively actuatable mechanism interconnecting said guide members and operable to move said guide members from a retracted position adjacent one another to an extended position away from one another and vice versa while maintaining said guide members in substantially parallel relation, said guide members contacting opposite internal surfaces of said component when in said extended position, said probe being rotatable within said component when said guide members are in said retracted position; remotely operable means for selectively actuating said mechanism; a transducer support arm supported and pivoted at an inner end thereof on one of said guide members; a transducer supported at the outer end of said support arm; a support arm linkage connected between said support arm and the other guide member whereby in the extended position of said guide members said transducer is urged against an inner surface area of said component.

4,196,049

SEGMENTED ARTICULATING MANIPULATOR ARM FOR NUCLEAR REACTOR VESSEL INSPECTION APPARATUS

David C. Burns, Trafford; Lanson Y. Shum, Delmont; Renato D. Reyes, Monroeville; Arthur F. Jacobs, Harmony; Duane W. Morris, North Huntingdon, and Raymond P. Castner, Monroeville, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 781,381, Mar. 25, 1977, abandoned.
This application Jun. 5, 1978, Ser. No. 912,608
Int. Cl.[2] G21C *17/00*
U.S. Cl. 176—19 R 5 Claims



1. Apparatus for inspecting a nuclear reactor vessel; the vessel having a plurality of guide studs extending upwardly therefrom defining a generally circular path; an internal locating element the exact position of which is known; an internal circumferential vessel flange; a support ring generally sized to relate to the path defined by the position of said guide studs; a plurality of guide stud bushings, equal in quantity to the number of said guide studs, said bushings being larger in internal diameter than the outer diameter of said guide studs; first clamping means for movably mounting said bushings on said support ring to enable, when loosened, alignment of each of said bushings with one of said guide studs; at least three support legs, all but one of said support legs including means for adapting said legs to contact and rest upon said internal circumferential vessel flange, the remaining support leg including means for adapting said leg to engage said internal locating element; a central column disposed with said support ring; and manipulatable apparatus for transporting a transducer array to accomplish the examination at any appropriate vessel point, said apparatus comprising:

first segment means, cooperably and movably linked to said central column, adapted to be driven independently through a first plane of motion parallel to said central column, independently through a second plane of motion about said central column and independently in a third plane of motion radially towards and away from said central column;

second segment means, cooperably and movably linked to said first segment means and adapted to be driven independently in a fourth plane of movement about an axis in said third plane of movement;

third segment means, cooperably and movably linked to said second segment means, and adapted to be driven independently in a fifth plane of movement that is normal to said fourth plane of movement;

fourth segment means, cooperably and movably linked to said third segment means, and adapted to be driven independently in a sixth plane of movement that is parallel to said fifth plane of movement;

fifth segment means cooperably and movably linked to said fourth segment means, and adapted to be driven independently in a seventh plane of movement;

sixth segment means, cooperably and movably linked to said fifth segment means, and adapted to be driven independently in an eighth plane of movement; and

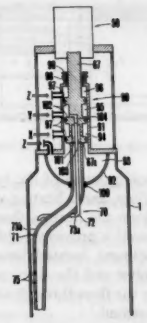
seventh segment means, cooperably and movably linked to said fifth segment means and to said transducer array, and adapted to be driven independently in a ninth plane of movement.

4,196,050

DECOKING APPARATUS

Hisao Takahashi, Yokohama; Takeshi Nomura; Yoshitomo Ohara, both of Tokyo; Hajime Nakanishi, Fujisawa; Naotaka Miwa, Ichihara; Naoshi Kawabe, Ichihara; Tomizo Endo, Ichihara; Hiroshi Hozuma, Ichihara, and Minoru Akimoto, Iwaki, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo and Chiyoda Chemical Engineering & Construction Co., Ltd., Yokahama, both of, Japan

Filed Feb. 3, 1978, Ser. No. 874,947
Claims priority, application Japan, Feb. 4, 1977, 52-11556[U]
Int. Cl.[2] C10G *7/00, 9/12*
U.S. Cl. 196—122 7 Claims



1. An apparatus for decoking a reaction vessel adapted for the thermal cracking of heavy petroleum oil comprising:

cylinder assembly means adapted for mounting in a top opening of a reaction vessel, said cylinder assembly means including cylinder means and piston means mounted in said cylinder means for reciprocating movement, said cylinder means and piston means defining a fluid chamber divided into multiple subchambers including a main scrubbing liquid subchamber and sealing fluid subchambers;

a main injection pipe in communication with said main scrubbing liquid subchamber and being connected to said piston means for reciprocating motion therewith; said main injection pipe having a plurality of perforations along the lower length of said main injection pipe for injecting scrubbing liquid from said main scrubbing liquid subchamber against inner wall surfaces of a reaction vessel;

means for injecting a fluid into said sealing subchambers of said multiple subchambers to drive said piston means with reciprocating motion; and

means for rotating said main injection pipe.

4,196,051

METHOD FOR PRODUCING COKE FROM FINE AND COARSE COAL

Jack R. Haley, Nashville; Jimmy B. Smith, Columbia, and H. Vaughn Mansfield, Gallatin, all of Tenn., assignors to Peabody Coal Company, St. Louis, Mo.

Filed Jun. 19, 1978, Ser. No. 917,108
Int. Cl.[2] C10B *49/06, 53/04, 57/00*
U.S. Cl. 201—24 2 Claims

1. A method for continously producing coke from relatively coarse and fine coals which comprises: continuously forming a bed consisting of a plurality of alternating side-by-side rows of relatively course and fine coal types respectively on an endless conveyor run moving horizontally through a hot coking furnace while feeding air upwardly through the bed in controlled

amounts sufficient to burn with combustible matter in the coal to heat the bed to coking temperature.

4,196,052

HEATING WALL CONSTRUCTION, PARTICULARLY FOR USE IN COKING OVENS

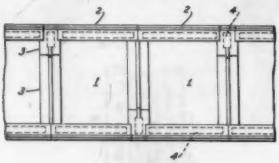
Erich Szurman, Velbert; Rainer Worberg, and Werner Eisenhut, both of Essen, all of Fed. Rep. of Germany, assignors to Bergwerksverband GmbH, Essen, Fed. Rep. of Germany

Filed Mar. 27, 1978, Ser. No. 890,191

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1977, 2713461

Int. Cl.[2] C10B *5/02, 29/02*

U.S. Cl. 202—138 **7 Claims**



1. In a horizontal coking oven of the type having a coking chamber and heating flues, and a heating wall which separates the coking chamber from the heating flues, the improvement wherein said heating wall is provided with at least one sealed gas-containing compartment located between and separated from the coking chamber and the flues, whereby the rate of heat transmission from the flues through said wall and into the coking chamber is increased.

4,196,053

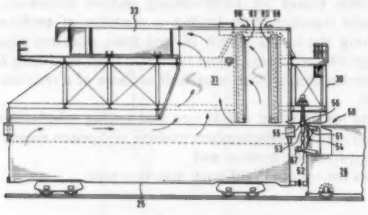
EQUIPMENT FOR OPERATING COKE OVEN SERVICE MACHINES

Klaus Grohmann, Kaarst, Fed. Rep. of Germany, assignor to Hartung, Kuhn & Co. Maschinenfabrik GmbH, Dusseldorf, Fed. Rep. of Germany

Filed Oct. 4, 1977, Ser. No. 839,329

Int. Cl.[2] C10B *25/12, 33/14, 39/14*

U.S. Cl. 202—227 **4 Claims**



1. Equipment for operating coke oven service machines between a quenching plant and the coke side of a battery of coke oven chambers having vertical heating flues and for simultaneously collecting, extracting, and purifying dirty dust-containing mixtures of gas and air, said equipment comprising:

a coke guide car and a coke guide mounted thereon, said coke guide car movable parallel to said battery of coke oven chambers on the coke side thereof;

a quench train having a coke loading region movable parallel to said battery of coke oven chambers on the coke side thereof;

a hood car movable forward and backward along said battery of coke oven chambers and having a hood, said hood of said hood car adapted to extend over said loading region of the quench train and having a hood opening adapted to communicate with said quench train;

a stationary gas collection duct alongside said battery of coke oven chambers and a gas transition car movable thereon, said stationary gas collection duct having a duct opening at the top and sealed by a flexible cover belt which can be lifted off by said gas transition car, said duct opening providing communication between the interior of said collection duct and said gas transition car;

a first movable duct connecting said gas transition car and said coke guide;

a second movable duct connecting said gas transition car and said hood;

coupling means between said hood car and quench train functional in said forward and backward directions for coupling together the hood car and quench train and permitting movement thereof, said coupling means having a control member;

a stationary unlocking means provided in front of the quenching plant for interacting with said control member to separate the hood car from the quench train; and

brake means on said hood car for automatically stopping its movement when the hood car is uncoupled from the quench train, said brake means including a means for automatically stopping the hood car in the braked position when said coupling means is released and

for releasing said brake means when the quench train is coupled to the hood car.

4,196,054

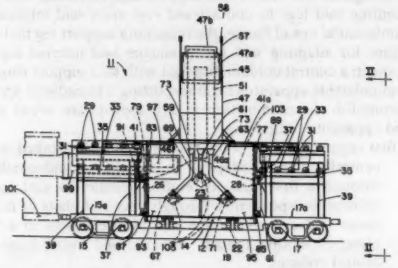
ONE-SPOT COKE QUENCHING APPARATUS

Joseph Becker, Jr., and Ronald O. McClelland, both of Pittsburgh, Pa., assignors to Koppers Company, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 659,337, Feb. 19, 1976, abandoned. This application Oct. 31, 1977, Ser. No. 846,892

Int. Cl.[2] C10B *39/14*

U.S. Cl. 202—227 **10 Claims**



1. Apparatus for receiving and cooling hot coke pushed from a chamber of a coke oven battery comprising:

(a) a frame that is arranged to be movable alongside the coke side of a coke oven;

(b) a hopper into which said hot coke gravitates, while said frame is stationarily positioned, mounted pivotally to said frame and having an open top;

(c) transversal stabilization means, fixed to said frame, upon which movement of said frame is effected and which transversely stabilizes said frame;

(d) pivotation means, mounting said hopper to said frame, arranged to allow pivotation of said hopper while maintaining the center of gravity of said hopper and said hot coke therein inboard of said transversal stabilization means;

(e) extendible and retractable means for covering and sealing said open top and said hot coke in said hopper from the ambient atmosphere, operative to contain hot gases and entrainment emanating from said hot coke;

(f) powered means for pivoting said hopper in a direction away from said battery for discharging said coke therefrom;
(g) means situated internally of said hopper and positioned to be surrounded by said hot coke therein for flooding a cooling fluid into said hot coke to concurrently level and quench said hot coke internally prior to and during the operation of a conventional quenching station;
(h) means for flowing a flood of cooling fluid into said means situated internally of said hopper;
(i) means for discharging said coke from said hopper when said hopper is fully pivoted away from said battery; and
(j) exit means by which said hot gases and entrainment are extracted from said hopper to be cleaned prior to entry into the ambient atmosphere.

4,196,055

METHOD OF DETERMINING THE PRESENCE OF STRAY ELECTRICAL CURRENTS IN A SOLUTION

Thomas J. Lennox, Jr., Springfield, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 25, 1975, Ser. No. 607,528
Int. Cl.[2] G01N *27/26*
U.S. Cl. 204—1 T **4 Claims**

1. A method of determining the presence of stray electrical currents near an object in a liquid, electrically conductive environment comprising the steps of:
rigging at least one flat copper-alloy plate in said environment with a flat surface spaced from but substantially facing said object, the plate being free from galvanic coupling to the rigging, and free from any externally applied electrical potential or current,
the plate material being of the type which reacts to the presence of a stray electrical current within said environment by a change in its color, and
determining whether a color change occurs on said plates.

4,196,056

ION SELECTIVE ELECTRODE ANALYSIS

Anand Kumar, Monroe, N.Y., assignor to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Oct. 30, 1978, Ser. No. 956,006
Int. Cl.[2] B01D *59/40*
U.S. Cl. 204—1 T **7 Claims**

1. A method of minimizing the effects of halide interferants in the analysis of an analyte in a fluid sample by an ion-selective electrode, comprising the steps of: (a) introducing a reagent into said fluid sample to form soluble complexes with said halide interferants in said fluid sample; and (b) analyzing said fluid sample for said analyte by means of said ion-selective electrode.

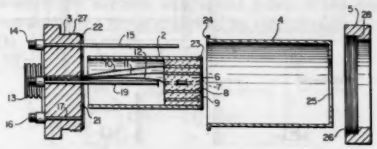
4,196,057

COLD END CORROSION RATE PROBE

Walter R. May, Des Peres; Michael J. Zetlmeisl, University City, and David F. Laurence, Creve Coeur, all of Mo., assignors to Petrolite Corporation, St. Louis, Mo.

Filed Aug. 31, 1978, Ser. No. 938,587
Int. Cl.[2] G01N *27/46, 27/30*
U.S. Cl. 204—1 T **10 Claims**

1. A cold end corrosion probe adapted to be flush mounted in an exhaust line or flue, said probe comprising:
(a) a center pin-type reference electrode;
(b) an annular test electrode and an annular auxiliary electrode arranged concentrically around said center pin-type reference electrode;
(c) a cylindrical matrix of heat resistant, electrically insulating material, said reference, test and auxiliary electrodes being embedded in said matrix with the longitudinal axes in alignment and the end faces of the electrodes being flush with the end face of the matrix;
(d) a probe body, said probe body supporting said matrix with said embedded electrodes;
(e) electrical terminal means supported by said probe body;
(f) separate electrical conductive means extending through said probe body and connected, respectively, at one end, to said reference electrode, said test electrode and said auxiliary electrode, and at the other end to said electrical terminal means;
(g) jacket means surrounding said probe body in a fluid-tight manner, said jacket means being adapted to allow said end face of said matrix and said end faces of said embedded electrodes to be exposed;
(h) means for bringing cooling fluid into heat exchange relationship with said matrix with said embedded electrodes; and



(i) means for measuring the temperature at said end face of the matrix.

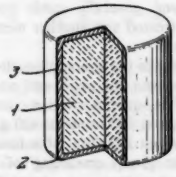
5. A process for measuring the dew point and corrosivity of a gas or vapor containing water vapor and components which dissolve in water to form electrolytes, comprising exposing the end face of a heat resistant, electrically insulating matrix and the end faces of three electrodes embedded therein so that they are insulated from each other and have end faces flush with the end face of said matrix, to said gas or vapor, said electrodes being a reference electrode, a test electrode and an auxiliary electrode, said electrodes being electrically connected to electrical means for measuring corrosion rate; cooling said matrix and embedded electrodes by heat transfer to a cooling fluid until a corrosion rate is measured; and measuring the temperature of said matrix and embedded electrodes when such corrosion rate is measured.

4,196,058

ELECTRICAL GALVANIC BATH CONTACT ELEMENT

Christian Seifert, Germersberg, Fed. Rep. of Germany, assignor to Stettner & Co., Nuremberg, Fed. Rep. of Germany

Division of Ser. No. 854,076, Nov. 23, 1977, abandoned. This application Aug. 31, 1978, Ser. No. 938,386
Int. Cl.[2] C25D *5/02, 17/16*
U.S. Cl. 204—15 **17 Claims**



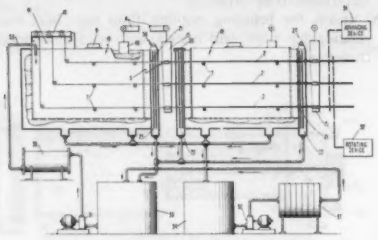
1. In a galvanic bath, a method of contacting electrically conductive material coated on structural, insulating material, forming electrical, or electronic structural and circuit components comprising the step of
mixing said components in the bath with contact elements having a core (1) made of a material of specific gravity having about the same order of magnitude as the specific gravity of the components and a metallic skin (3) essentially entirely covering said core (1);
and agitating together, said components and said elements.

4,196,059

METHOD FOR ELECTROLYSIS OF NON-FERROUS METAL

Dimiter A. Petrov, Zlatitza; Ivan P. Shentov, Pirdop, and Vladimir V. Genevski, Sofia, all of Bulgaria, assignors to Medodobiven Kombinat "G. Damyanov", Pirdop, Bulgaria

Filed Oct. 6, 1975, Ser. No. 620,113
Claims priority, application Bulgaria, Oct. 4, 1974, 27850
Int. Cl.[2] C25C *1/00, 1/12, 7/00, 21/10*
U.S. Cl. 204—28 5 Claims



1. In a method for the electrolysis of a non-ferrous metal comprising the steps of moving a cathode longitudinally through an electrolysis chamber, associating an anode with the chamber in spaced relation to the moving cathode, the improvement which comprises the steps of introducing at least one jet of electrolyte into the electrolysis chamber in a direction normal to the cathode so as to form a turbulent flow therein to turbulently agitate the interface between the cathode and the electrolyte and positioning an anode longitudinally in the chamber parallel to and transversely spaced from the moving cathode, and positioning a solid, electrolyte-permeable membrane longitudinally in the chamber parallel to and intermediate the anode and the moving cathode to inhibit the flow of gases and impurities therebetween.

4,196,060

METHOD OF SURFACE TREATING AN ALUMINUM WIRE FOR ELECTRICAL USE

Jos Patrie, Grenoble; Jacques Lefebvre, Voiron, and Dominique Boddele, Voreppe, all of France, assignors to Societe de Vente de l'Aluminium Pechiney, France

Filed Jan. 8, 1976, Ser. No. 647,406
Claims priority, application France, Jan. 22, 1975, 75 02667
Int. Cl.[2] C25D *11/08, 11/16, 11/18*
U.S. Cl. 204—28 7 Claims

1. A method of surface treating an electrical conductor wire of aluminum or aluminum alloy to form a thin oxide layer which permits low and generally stable contact resistance between a wire thus treated and another metallic conductor, comprising the steps of:

(a) subjecting the wire to the action of an alternating current which passes between the wire and another electrode through a bath of an aqueous solution containing as essential constituents about 100 to about 400 g/liter of H_3PO_4 and about 0.5 to about 30 g/liter of at least one surfactant selected from the group consisting of polyfluorinated organic derivatives comprising a straight or branched perfluorinated chain with 4 to 20 carbon atoms, polyethoxylated fatty alcohols, substituted phenols, glycols, polyethylene glycols, and alkylsulfonates with an alkyl chain of 8 or 9 carbon atoms that exerts a foamless detergent and emulsifying action; and

(b) discontinuing the alternating current anodization after about 3 to about 10 seconds,

wherein the thin oxide layer formed maintains the property of permitting low contact resistance with the passage of time.

4,196,061

DIRECT NICKEL-PLATING OF ALUMINUM

Raichur Satee, Schaumburg, Ill., assignor to Chemray Corporation, Westchester, Ill.

Filed Aug. 21, 1978, Ser. No. 935,113
Int. Cl.[2] C25D *5/34, 5/44*
U.S. Cl. 204—33 8 Claims

1. A process for forming a coating of nickel directly on aluminum articles and on articles of aluminum alloys, without predeposition of an intermediate layer,

said process comprising the steps of activating the surface of precleaned aluminum articles by immersing the articles in a solution containing, in combination, a salt selected from the group consisting of the cyanides of nickel, cobalt and chromium, in a concentration of from about 4 to about 6 ounces of salt per gallon of solution and ammonium hydroxide, in a concentration corresponding to about 2% to about 5% of a 30% ammonium hydroxide solution per gallon of solution,

supporting said articles cathodically in an electrolytic bath containing nickel, and plating nickel on the articles by electrolytic action.

4,196,062

METHOD OF BRIGHTENING ELECTRODEPOSITED CHROMIUM

Donald J. Barclay, and James M. Vigar, both of Olivers Battery, England, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 20, 1978, Ser. No. 962,279
Claims priority, application United Kingdom, Apr. 6, 1978, 13459/78
Int. Cl.[2] C25D *5/52*
U.S. Cl. 204—36 5 Claims

1. A method of brightening an electroplated chromium deposit the surface of which contains chromium hydroxide species comprising contacting said deposit with an aqueous solution of an alkaline ferricyanide in the absence of an externally applied voltage to form complexes with said chromium hydroxide species and detaching the complexes so formed from the surface of an electroplated deposit.

4,196,063

ELECTRODEPOSITION OF BLACK CHROMIUM

Clive Barnes, West Hanney, and John J. B. Ward, Wantage, both of England, assignors to International Lead Zinc Research Organization, Inc., New York, N.Y.

Filed Apr. 19, 1979, Ser. No. 31,748
Claims priority, application United Kingdom, Jun. 2, 1978, 26286/78
Int. Cl.[2] C25D *3/56*
U.S. Cl. 204—43 R 10 Claims

1. An electrolyte solution for electrodeposition of black chromium on a substrate, said solution comprising water, trivalent chromium ions in a concentration of from about 0.01M to about 2.0M, from about 2 to about 25 g/l of ions of a metal selected from the group consisting of iron and cobalt, phosphate ions in a concentration of from 1 to about 5 g/l, and from about 0.1M to about 6M of a weak complexing agent selected from the group consisting of hypophosphite and formate.

4,196,064

MARINE FOULING CONTROL

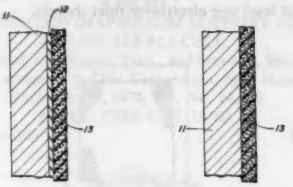
Robert L. Harms, and Merle Hutchison, both of Ponca City, Okla., assignors to Conoco, Inc., Ponca City, Okla.

Filed Nov. 6, 1978, Ser. No. 958,279
Int. Cl.[2] C23F *13/00*; C09D *5/08, 5/10*
U.S. Cl. 204—147 14 Claims

1. In combination with a structure exposed to marine fouling, the improvement comprising:

(a) an electrically conductive coating adhered to the struc-

ture in zones exposed to the fouling comprised of particles of a stainless steel alloy containing chromium within a coating matrix;



(b) an electrical potential generator in electrical contact with the coating sufficient to impart potential thereto sufficient to inhibit or to detach marine growth.

4,196,065

HYDROPHOBIC SUBSTRATE WITH GRAFTED HYDROPHILIC INCLUSIONS

Gilbert Gaussens, Meudon, and Francis Lemaire, Clamart, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Continuation of Ser. No. 522,968, Nov. 11, 1974, abandoned. This application Nov. 1, 1976, Ser. No. 737,453

Claims priority, application France, Nov. 9, 1973, 73 4002

Int. Cl.[2] C08F *2/54, 51/00*

U.S. Cl. 204—159.17 **56 Claims**

1. A method for storing polar solvent soluble substance in a solid hydrophobic polymerized substrate and then controllably releasing said substance into a polar solvent, which comprises the steps of:

(1) storing said substance in said substrate, by

(a) immersing said solid hydrophobic polymerized substrate in a solution containing ethylenically unsaturated polymerizable hydrophilic monomers in the presence of at least one polymerization inhibitor, a cross linking agent and said polar solvent soluble substance, said polar solvent soluble substance being other than said at least one polymerization inhibitor, said hydrophilic monomers, or said cross linking agent,

(b) grafting, and polymerizing said hydrophilic monomers in said solid substrate by irradiating said substrate immersed in said solution by means of an ionizing radiation in order to obtain a solid hydrophobic polymerized substrate containing a network of hydrophilic inclusions, and cross-linking said hydrophilic inclusions through said cross-linking agent during said irradiation.

(c) simultaneously absorbing said polar solvent soluble substance in the hydrophilic inclusions of said substrate while said substrate is immersed in the solution containing said polar solvent soluble substance, and

(d) removing the substrate containing said substance from said solution; and

(2) controllably releasing said polar solvent soluble substance from said substrate by contacting said substrate with a polar solvent in order to desorb said substance in said polar solvent at a controlled rate.

4,196,066

CURED AROMATIC POLYESTER COMPOSITION AND PROCESS FOR ITS PRODUCTION

Hiroo Inata; Makoto Ogasawara; Tsuto Morinaga, and Akihiro Norike, all of Hino, Japan, assignors to Teijin Limited, Osaka, Japan

Filed Jun. 30, 1978, Ser. No. 920,834

Claims priority, application Japan, Jul. 5, 1977, 52/79445; Apr. 10, 1978, 53/41326; Apr. 12, 1978, 53/42062

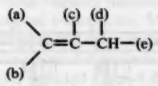
Int. Cl.[2] C08F *8/00;* C08G *18/00*

U.S. Cl. 204—159.15 **12 Claims**

1. A process for preparing a cured linear aromatic polyester composition, which comprises extruding under melting conditions an uncured linear aromatic polyester composition, said uncured polyester composition comprising

(A) 100 parts by weight of a saturated linear aromatic polyester in which at least 70 mole% of the acid component consists of an aromatic dicarboxylic acid, and

(B) 0.1 to 50 parts by weight of a reactive compound which is solid at room temperature or is a liquid having a boiling point of at least 200° C. under atmospheric pressure, and which contains in its molecule at least one aliphatic unsaturated group substantially non-reactive with the polyester (A) and the aliphatic unsaturated group of the reactive compound (B) under conditions of melt-blending with the polyester (A) and at least one epoxy group reactive with the polyester (A) under the melt-blending conditions wherein the aliphatic unsaturated group of the reactive compound is a group expressed by the following formula (I)



(I)

wherein the bonds (a), (b), (c) and (d) are attached to hydrogen or organic groups and bond (e) is attached to an organic group; and

subjecting the resulting extrudate to a curing treatment.

4,196,067

ABSORPTION OF MAGNETIC FIELD LINES IN ELECTROLYTIC REDUCTION CELLS

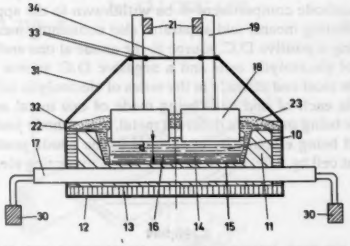
Hans Friedli, Steg, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Jan. 29, 1979, Ser. No. 7,428

Claims priority, application Switzerland, Feb. 7, 1978, 1355/78

Int. Cl.[2] C22D *3/02*

U.S. Cl. 204—243 M **15 Claims**



1. Device for absorbing vertical magnetic fields in electrolytic reduction cells having a cathode, an electrolyte and anodes immersed therein, in which the said device comprises the steel shell of the reduction cell and for the upper part of the cell a covering magnetically coupled to said shell, which covering is made of a metal of high magnetic conductivity, whereby the screening effect is uniform over the whole of the cell and the screening is at the same potential resulting in improved efficiency and reduction in cost.

4,196,068

CHLORINE GAS PRODUCING APPARATUS

Frank J. Scoville, 4646 S. 3075 East, Salt Lake City, Utah 84117

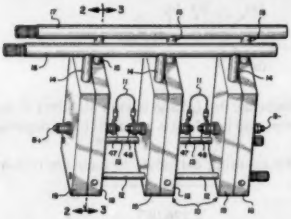
Filed Jun. 26, 1978, Ser. No. 919,124

Int. Cl.[2] C25B *9/04, 11/03, 11/10, 1/26*

U.S. Cl. 204—255 **8 Claims**

1. An apparatus for electrolytically producing chlorine gas

comprising a series of separately housed electrolytic cells interconnected by feeding means for simultaneously introducing an alkali metal chloride brine solution to an anode compartment in each of said cells and feeding means for simultaneously introducing deionized water to a cathode compartment in each of said cells and by collecting means for simultaneously collecting chlorine gas and spent brine solution from the anode compartment in each of said cells and collecting means for simultaneously collecting hydrogen and an alkali metal hydroxide solution from the cathode compartment in each of said cells, wherein each of said cells are divided into anode and cathode compartments by an ion permeable membrane, which membrane is impermeable to water and gas; said anode compartments containing an anode having a connecting post seated therein and having an inlet passageway which allows introduction of the alkali metal chloride brine solution into the lower portion of the anode compartment from the appropriate feeding means, and an outlet passageway which allows chlorine gas



produced at the anode along with spent brine solution to be withdrawn to the appropriate collecting means; said cathode compartment containing a cathode having a connecting post seated therein and having an inlet passageway which allows introduction of deionized water into the lower portion of the cathode compartment from the appropriate feeding means, and an outlet passageway which allows the hydrogen gas produced at each cathode and alkali metal hydroxide solution produced in the cathode compartment to be withdrawn to the appropriate collecting means; said apparatus also containing means for supplying a positive D.C. source to the anode at one end of the series of electrolytic cells and a negative D.C. source at the opposite most end cathode in the series of electrolytic cells, the anode in each of said cells being made of one metal and the cathode being made of a different metal, the cathode post from one cell being electrically connected to the anode post of an adjacent cell by a flexible detachable interconnecting electrical wire.

4,196,069

MEANS FOR DISTRIBUTING ELECTROLYTE INTO ELECTROLYTIC CELLS

Luciano Mose, Dortmund; Helmut Schurig, Holzwickede, and Bernd Strasser, Hamm, all of Fed. Rep. of Germany, assignors to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Filed May 17, 1979, Ser. No. 39,996

Claims priority, application Fed. Rep. of Germany, May 19, 1978, 2821980

Int. Cl.[2] **C25B** *15/08, 9/00*

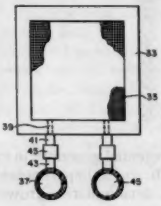
U.S. Cl. 204—257 **6 Claims**

1. An electrolyte feed system for feeding an individual supply of electrolyte to a plurality of electrolytic cells in a filter press cell circuit comprising:

(a) a primary feed line having a plurality of outlets spaced along the length thereof, said primary feed line having a closed end and an open end, said open end adapted to receive a supply of electrolyte,

(b) a secondary feed line encasing said primary feed line and having a plurality of outlets spaced along the length thereof, said secondary feed line having at least one end sealably receiving said primary feed line,

(c) a plurality of electrolytic cells, each cell having at least one electrolyte compartment and each compartment having at least one electrolyte inlet therein,



(d) said outlets in said primary feed line spacedly aligned with the outlets in said secondary feed line and said outlets in said secondary feed line communicatively connected with said electrolyte inlets in said cell compartments, and

(e) said outlets in said primary feed line being substantially smaller than the outlets in said secondary feed line and said inlets in said cell compartments.

4,196,070

METHOD FOR FORMING MICROPOROUS FLUOROCARBON POLYMER SHEET AND PRODUCT

Kwang C. Chao, Palo Alto, and Mark C. Porter, Pleasanton, both of Calif., assignors to Nuclepore Corporation, Pleasanton, Calif.

Filed Dec. 12, 1977, Ser. No. 859,559

Int. Cl.[2] **B29D** *27/00*

U.S. Cl. 204—266 **27 Claims**

1. In a method for forming a microporous fluorocarbon sheet membrane, the steps of:

(a) mixing an aqueous dispersion of fluorocarbon polymer with a pore-forming agent comprising a watersoluble crystallizable metallic organic salt, the crystal of said salt being stable at the sintering point of said fluorocarbon polymer,

(b) forming a wet sheet from said aqueous dispersion,

(c) concentrating the aqueous dispersion to grow crystals of said dissolved organic salt dispersed through said sheet,

(d) drying said crystal-containing sheet,

(e) sintering the dry sheet, and

(f) leaching the salt crystals from the sheet in an aqueous medium and removing the formed aqueous solution from the sheet.

26. An electrolytic cell comprising an anolytic compartment, a catholyte compartment and a membrane therebetween, said membrane comprising a microporous continuous sheet consisting essentially of fluorocarbon polymer and including pores dispersed throughout said sheet, said pores being interlaced in a void space network of intersecting shafts forming a matte surface in a sponge-like configuration on at least one side

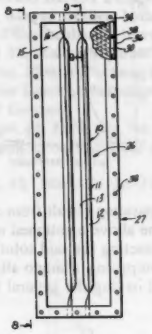
of said sheet, said sheet forming the negative image of said pores.

4,196,071

VENTILATED DIAPHRAGM SUPPORT FOR CHLOR-ALKALI CELL

Judson A. Wood, Charleston, Tenn., and Steven J. Specht, Mentor, Ohio, assignors to Olin Corporation, New Haven, Conn.

Filed Feb. 22, 1979, Ser. No. 14,020
Int. Cl.[2] C25B *9/00, 13/02*
U.S. Cl. 204—266 **14 Claims**



1. In a diaphragm-type cell for the production of chlorine gas having an anode, a cathode, a cell housing defining an anode chamber about said anode and a cathode chamber about said cathode, a diaphragm separating said cathode chamber from said anode chamber, a chlorine outlet in fluid communication with said anode chamber and a clamp for attaching said diaphragm to said housing, said diaphragm being attached at its upper end by a clamp to and extending downwardly from said cell housing, the improvement comprising:

(a) a support member, projecting downwardly from and spaced inward from said cell housing, for loosely underlying and supporting at least a portion of said downwardly extending diaphragm, and

(b) ventilation passageway means, separate from and in addition to said chlorine outlet and passing through said support member at a point lower than said chlorine outlet, for allowing liquid gas flow between said support member and said portion of said diaphragm so as to allow continual contact of said portion of said diaphragm with liquid.

4,196,072

HYDROCONVERSION PROCESS

Clyde L. Aldridge, and Roby Bearden, Jr., both of Baton Rouge, La., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed May 23, 1978, Ser. No. 909,200
Int. Cl.[2] C10G *1/06, 13/02*
U.S. Cl. 208—10 **25 Claims**

1. In a process for the hydroconversion of a carbonaceous material which comprises:

(a) forming a mixture of said carbonaceous material and a poly acid selected from the group consisting of isopoly acids and heteropoly acids and salts thereof, wherein said poly acid comprises at least one metal constituent selected from the group consisting of molybdenum and tungsten;

(b) converting said poly acid to a catalyst within said mixture in the presence of a hydrogen-containing gas by heating said mixture to an elevated temperature;

(c) reacting the resulting mixture containing said catalyst with hydrogen under hydroconversion conditions; and

(d) recovering a normally liquid hydrocarbon product, the improvement which comprises: adding said poly acid and phosphoric acid, to said mixture said phosphoric acid being added in an amount such as to provide a ratio from about 0.5 to about 3.5 atoms of phosphorus per one atom of said metal constituent, said catalyst of step (b) being the conversion product of said phosphoric acid and said poly acid.

4,196,073

HYDROPHILIC THIO COMPOUNDS AS SELECTIVE DEPRESSANTS IN THE FLOTATION SEPARATION OF COPPER AND MOLYBDENUM

David J. Gannon, St. Bruno, Canada, assignor to Canadian Industries Limited, Montreal, Canada

Filed Mar. 20, 1978, Ser. No. 888,167
Claims priority, application Canada, Apr. 22, 1977, 276821
Int. Cl.[2] B03D *1/02*
U.S. Cl. 209—167 **5 Claims**

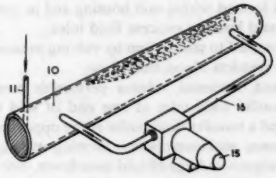
1. A process for separating molybdenite from copper sulphide and other metal sulphide minerals with which it is associated in a metallurgical concentrate, which comprises depressing the copper sulphide and other metal sulphide minerals with from about 0.1 to about 5.0 pounds per ton of concentrate solids of a reagent selected from 2-thiouracil, 6-amino-2-thiouracil, 6-methyl-2-thiouracil, 2-thiobarbituric acid, thioorotic acid, 2-thiohydantoin, pseudothiohydantoin, 2-amino-4-oxo-5-thiazolidineacetic acid, D-glucose thiourea adduct, cysteine, methionine, amidinothioacetic acid, amidinothioethane sulphonic acid, 2-mercapto-3-pyridinol, rhodanine-N-acetic acid, N-amino-rhodamine and any alkali metal or acid salts of these, selectively floating molybdenite from the depressed copper sulphide and other depressed metal sulphide minerals and recovering the resulting flotation concentrate of molybdenite.

4,196,074

SEWAGE TREATMENT

Michael E. Garrett, Woking, and Kenneth C. Smith, Roydon, both of England, assignors to BOC Limited, England

Filed Nov. 16, 1977, Ser. No. 852,103
Claims priority, application United Kingdom, Nov. 18, 1976, 48165/76
Int. Cl.[2] C02C *1/02*
U.S. Cl. 210—3 **5 Claims**



1. A method of treating sewage pumped intermittently through a sewer, comprising:

dissolving an oxygen-containing gas in sewage passing to, or through, a sewer pipe during periods when sewage is being pumped through the sewer pipe;

withdrawing a stream of sewage from the sewer pipe at a first position only during periods when sewage is being held in the sewer pipe without pumping of said sewage within said sewer pipe;

passing such stream through a conduit so as to promote in such stream dissolution of oxygen-containing gas introduced into or entrained in thhe stream; and,

introducing the stream into the sewage in the sewer pipe at a second position spaced along the sewer pipe from said first position to maintain a chosen concentration of dissolved oxygen in the volume of sewage between said first and second positions, the stream being introduced into the

sewer pipe only during periods when sewage is being held in the sewer pipe without pumping of said sewage within said sewer pipe.

4,196,075

MEMBRANE FLUID TRANSFER METHOD AND APPARATUS

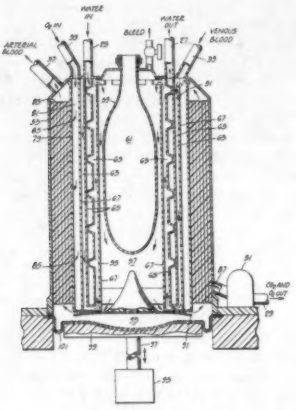
Donald J. Bentley, Newport Beach, Calif., assignor to Bentley Laboratories, Inc., Irvine, Calif.

Continuation of Ser. No. 721,523, Sep. 8, 1976, abandoned. This application Oct. 13, 1978, Ser. No. 951,166

The portion of the term of this patent subsequent to Jun. 13, 1995, has been disclaimed.

Int. Cl.[2] A61M *1/03*; B01D *13/00, 31/00*

U.S. Cl. 210—19 **24 Claims**



1. A membrane fluid transfer device comprising:

a housing having a process fluid inlet and outlet;

an atrium chamber means for providing a reservoir for incoming fluid formed within said housing and in communication with said housing process fluid inlet;

a ventricle connected to said atrium by valving means which substantially restricts blood back flow;

a spirally wound, flattened, tubular permeable membrane having a transfer fluid inlet at one end of said tubular membrane and a transfer fluid outlet at the opposite end of said membrane, said membrane forming passageways between adjacent windings of said membrane, one end of said passageways being in communication with said ventricle and the opposite end of said passageways being in communication with said housing process fluid outlet;

said ventricle being further defined as including means for pumping fluid through said passageways between said adjacent windings of said membrane, said ventricle means being connected to said atrium by a fluid passageway having said ventricle valving means positioned within said fluid passageway, said ventricle being in connection with said membrane windings and a portion of said ventricle being formed by a member adapted to be actuated by a driving means; and

control means for closing said transfer fluid outlet at the initiation of the pressure stroke of said ventricle driving means, and for rapid opening of said transfer fluid outlet and rapid exhalating of transfer fluid from said membrane at the completion of said pressure stroke of said ventricle driving means.

4,196,076

SEPARATION OF COBALT AND NICKEL BY SOLVENT EXTRACTION

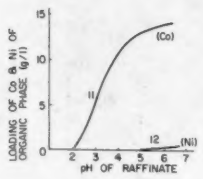
Akihiro Fujimoto, Higashi-Osaka; Isami Miura, Nara, and Kazuo Noguchi, Tegukayamani, all of Japan, assignors to Daihachi Chemical Industry Co., Ltd., Japan

Filed May 15, 1978, Ser. No. 906,279

Claims priority, application Japan, May 14, 1977, 52-55872

Int. Cl.[2] B01D *11/00*

U.S. Cl. 210—21 **9 Claims**



1. A process for separating cobalt from nickel in an aqueous solution containing the above-mentioned metals, with consists essentially of (A) contacting the said solution with an organic extraction solvent comprising a mono-alkyl alkylphosphonic acid as extractant and having the general formula:

wherein R represents 2-ethylhexyl, 3,5,5-trimethylhexyl, or isodecyl,

whereby cobalt is extracted from the aqueous solution into the organic phase, and (B) subsequently separating the resultant cobalt loaded organic phase from the aqueous phase.

4,196,077

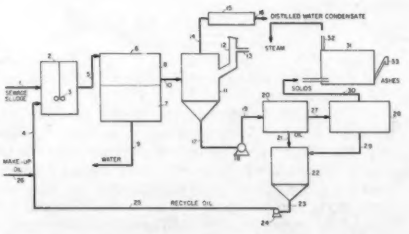
SEWAGE SLUDGE DEWATERING

Leonard Berkowitz, Miami, Fla.; Jerome Geyer, West Orange, N.J.; Alan Beerbower, Westfield, N.J., and William J. Asher, Fanwood, N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 482,247, Jun. 24, 1974, abandoned, which is a continuation of Ser. No. 278,272, Aug. 7, 1972, abandoned. This application Nov. 19, 1975, Ser. No. 633,378

Int. Cl.[2] C02B *1/04, 1/20*

U.S. Cl. 210—22 R **7 Claims**



1. A method for dewatering a stream containing predominantly secondary sewage sludge, said sludge containing solid materials entrained therein, which comprises (1) admixing said stream with a hydrocarbon oil at shear rates of at least 130

seconds^{-1}, the weight ratio of said hydrocarbon oil to said sludge being maintained in an amount of less than about 0.6, (2) settling said mixture at a temperature of at least 72° F. into a lower phase comprising water and an upper phase of substantially reduced water content comprising said hydrocarbon and said solid sludge materials, and (3) separating said upper phase therefrom, at least 85 wt. % of the solid materials entrained in the sewage sludge being present in said upper phase.

4,196,078

PROCESS AND APPARATUS FOR DEWATERING GRANULATED MATERIAL, ESPECIALLY GRANULATED BLAST FURNACE SLAG

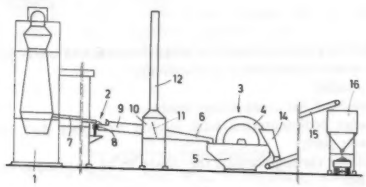
Erich Müller-Späth; Konrad Müller, both of Schelder Strasse, 5905 Freudenberg-Oberfischbach; Heinz Kister, Erbenstrasse 8, 4600 Dortmund 12; Walter Schürhoff, Forstbaum 3; Friedrich W. Hillnhütter, Kleiner Floraweg 40, both of 4600 Dortmund 50, and Walter Laucht, Kampenstrasse 10, 5800 Hagen, all of Fed. Rep. of Germany

Filed Nov. 14, 1978, Ser. No. 961,388

Claims priority, application Fed. Rep. of Germany, Feb. 22, 1978, 2807441

Int. Cl.^{2} B01D *23/24, 37/02*

U.S. Cl. 210—75 **1 Claim**



1. Process for dewatering granular particulate, mineral material, comprising feeding the material to a bucket wheel (3), dewatering the material in perforated scoops (13, 106) of the bucket wheel (4, 101), conveying the material via a hopper (14, 107) to a continuous conveyor (15, 108), and collecting the water overflowing from the bucket wheel (3) and containing floating and suspended particles, in filter chutes wherein the floating and suspended particles form a filter layer above a perforated bottom; continuously scraping the granules of the filter layer from the top sufficient to provide a continuous rehabilitated precoat layer of said particulate mineral material, and transferring the scrapped-off material to said continuous conveyor; and feeding the water, filtered in this way, to a settling tank for reuse.

4,196,079

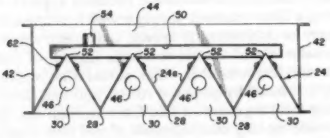
PLEATED FILTER UNDERDRAIN, METHOD AND APPARATUS

Thomas D. Ward, Mineral Wells, Tex., assignor to Harsco Corporation, Wormleysburg, Pa.

Filed Dec. 29, 1978, Ser. No. 974,424

Int. Cl.^{2} B01D *23/18*

U.S. Cl. 210—80 **8 Claims**



1. A filter underdrain system for supporting a multi-layered filter bed having a lower layer of coarse filter media and a layer of fine filter media disposed thereover to collect filtered liquid and to permit backwashing of the filter bed comprising: a corrugated filter underdrain forming a plurality of parallel channels having peaks formed by valley walls such that the coarse filter media is positioned between the valley walls below the peaks and the fine filter media disposed thereover, said filter underdrain having a plurality of air outlet openings formed in the upper portion of the valley walls adjacent the said peaks and communicating with the fine layer of filter media, said filter underdrain further having collection openings formed in the lower portion of the valley walls to collect filtered liquid from the layer of coarse filter media said collection openings being smaller than said air outlet openings such that liquid is evacuated from an upper portion of said channels before air escapes through said air outlet openings into the fine filter media; and air supply means communicating with the peaks of said channel, said air supply means being positioned above said peaks to permit removal of excess air within said channels to fill said channels with liquid.

4,196,080

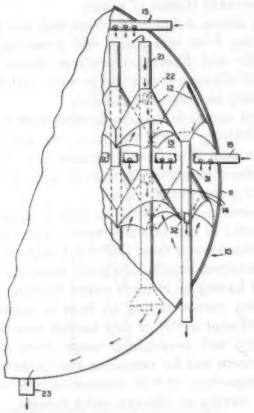
GRAVITY SETTLING PROCESS

Andre A. Simone, Denville; Dennis F. Ogren, Verona; William R. Adams, Upper Montclair, and Harold B. Kohn, Cedar Grove, all of N.J., assignors to The Lummus Company, Bloomfield, N.J.

Filed Nov. 13, 1978, Ser. No. 959,646

Int. Cl.^{2} B01D *21/01;* **C02B** *1/20*

U.S. Cl. 210—83 **2 Claims**



1. A process for separating insoluble material from a coal liquefaction product in a plurality of single gravity settling stages, comprising the steps of:

introducing a coal liquefaction product comprised of a liquid coal extract of dissolved carbonaceous matter in a coal liquefaction solvent and insoluble material into each of a plurality of vertically spaced separate single gravity settling stages defined between a plurality of hollow conically shaped members arranged in a housing in a plurality of vertically spaced horizontal layers having their axes positioned substantially vertical with the apexes above the base, said coal liquefaction product being separately introduced into each of the vertically spaced separate gravity settling stages;

withdrawing liquid essentially free of solids from the uppermost portions of each of the vertically spaced separate gravity settling stages; and

withdrawing liquid containing solids from the lowermost portions of each of said vertically spaced separate gravity settling stages; said steps being effective to provide essen-

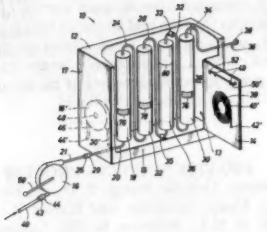
tial completion of gravity settling in each of said single gravity settling stages.

4,196,081

APPARATUS FOR EMERGENCY WATER PURIFICATION

Edgar H. Pavia, 431 Gravier St., New Orleans, La. 70130

Filed Apr. 13, 1978, Ser. No. 896,011
Int. Cl.[2] B01D 27/02
U.S. Cl. 210—94 9 Claims



1. Apparatus for providing potable water from a contaminated source, comprising

a manually operated pump having an inlet for drawing contaminated water from the source and an outlet for providing a pressurized stream of water;

first filtering means in communication with said pump outlet for receiving from said pump said pressurized contaminated water and filtering therefrom coarse particulate matter of 10 microns in size and greater, said first filtering means having an outlet for effluent,

first treatment means in communication with the outlet of said first filtering means for receiving said pressurized water from said first filtering means and removing selected organic impurities therefrom, said first treatment means having an effluent outlet,

second treatment means having an inlet in communication with the outlet of said first treatment means for receiving said pressurized water from said first treatment means and removing selected metallic inorganic impurities therefrom and further having an effluent outlet therein,

second filtering means having an inlet in communication with said effluent outlet of said second treatment means for receiving said pressurized water from said second treatment means and for removing fine particulate matter including organisms of 0.20 microns in size and greater and further having an effluent outlet therein,

said first treatment means being a granulated activated carbon bed for removing from said water unpleasant odors, taste, and selected carcinogens,

said second treatment means being a mixed-bed deionization resin material wherein positive cations in the water are exchanged for hydrogen ions in the resin and negatively charged anions are exchanged for hydrogen oxide ions in the resin,

the pore openings of said second filtering means being sufficiently small to remove from the water all *E. coli,* and pseudomonas and salmonella bacterial organisms larger than 0.20 microns, said filtering and treatment means each comprising,

a tube-like housing member having a substantially transparent wall portion and further having an inlet and an outlet port for receiving and discharging said stream of contaminated water at not greater than a preselected flow rate,

a permeable element removably disposed in said housing member across said stream of water and at least partially adjacent said transparent wall portion,

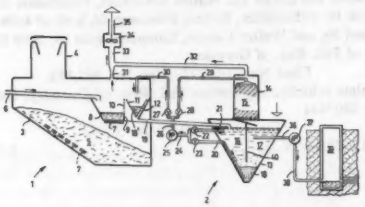
said housing further having an indexing mark disposed adjacent said transparent wall portion for providing a visible indication of the condition of said element.

4,196,082

COMBINATION OF A BIOLOGICAL DRY TOILET AND A BIOLOGICAL WASTE WATER PURIFYING PLANT

Teuvo T. Salokangas; Unto T. Lammi, and Tapani J. Miettinen, all of Lahti, Finland, assignors to Asko-Upo Oy, Lahti, Finland and AGA Heating AB, Gothenburg, Sweden

Filed Aug. 24, 1978, Ser. No. 936,548
Claims priority, application Finland, Sep. 2, 1977, 772613
Int. Cl.[2] B01D 21/02; C02C 1/06
U.S. Cl. 210—180 2 Claims



1. An integrated domestic sewage disposal and water purification system comprising in combination:

a dry toilet;

a main tank for composting waste;

a sludge sedimentation tank having an upper part and a lower part;

a biofilter through which the water to be purified is circulated;

first pipe means for removing water from the upper part of the sedimentation tank to the biofilter;

second pipe means for removing sludge from the lower part of the sedimentation tank to the main tank;

third pipe means for feeding gray water from the household to mechanical purifying means;

heat exchanger means for extracting heat from said gray water and passing this heat to the waste composting in said main tank;

fourth pipe means for feeding the mechanically purified water from said mechanical purifying means to the sludge sedimentation tank;

and a common suction fan for changing the air in the dry toilet and the biofilter.

4,196,083

APPARATUS AND METHOD FOR CONTINUOUS PLATING BATH TREATMENT SYSTEM

John G. Koltse, 2939 N. Oakley, Chicago, Ill. 60648

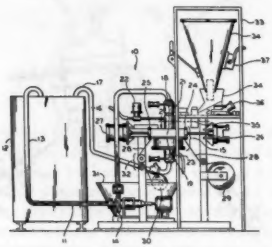
Continuation-in-part of Ser. No. 785,832, Apr. 8, 1977, Pat. No. 4,133,757, which is a continuation-in-part of Ser. No. 705,796, Jul. 16, 1976, abandoned. This application Jun. 15, 1978, Ser. No. 915,782
Int. Cl.[2] B01D 29/02
U.S. Cl. 210—193 4 Claims

1. In combination with automatic filtration apparatus of the type having a filter chamber through which continuous filter medium may be intermittently drawn, and an entry door selectively openable and closeable to enable ingress of said filter medium to said filter chamber, wherein said filter medium may be linearly advanced by powered rollers into said filter chamber to bring fresh segments of said filter medium into filtering position, while moving used segments of said filter medium out of filtering position, the improvement comprising:

means to collect used segments of said filter medium onto a reel mechanism;

said collecting means including a reel shaft,

said shaft having a first end and a second end,
said first end having a first collar positioned proximate thereto,
first means to slidably position said first collar along said reel shaft and to secure said first collar at a selected point therealong,
said second end having a second collar positioned proximate thereto,



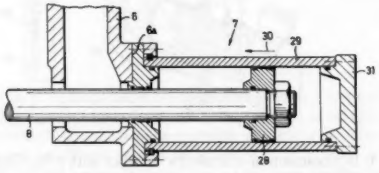
second means to slidably position said second collar at a selected point therealong;
said first and second positioning means having means thereon to contact said filter medium; and
means to rotatably drive said reel shaft, whereby said filter medium is drawn by said contacting means to be wound onto said reel shaft.

4,196,084

PLATE FILTER PRESS

Alfons Schotten, Düren, Fed. Rep. of Germany, assignor to Eberhard Hoesch & Söhne GmbH & Co., Düren, Fed. Rep. of Germany

Filed Sep. 19, 1977, Ser. No. 834,447
Claims priority, application Fed. Rep. of Germany, Sep. 21, 1976, 2642357
Int. Cl.[2] B01D *25/00*
U.S. Cl. 210—224 **7 Claims**



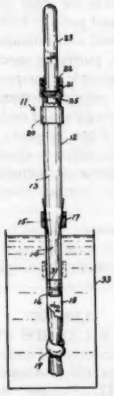
1. In a plate filter press including a plurality of filter plates forming a filter plate stack having opposite ends; a machine frame including an overhead guide carrier having a guide track defining a plane and supporting the filter plates for individual displacement thereof in a direction parallel to the longitudinal axis of the plate filter press; a longitudinally displaceable head plate arranged at one end of the filter plate stack; means coupled to said guide carrier and said head plate for guiding said head plate along said guide carrier for displacing said head plate parallel to itself; an end plate arranged at the other end of the filter plate stack and unshiftably supported on the guide carrier; a power device attached to the head plate; and pull rod means having one end attached to the end plate and another end coupled to the power device for urging the end plate and the head plate towards one another by the power device for pressing the filter plates to one another in the closed state of the plate filter press; the improvement wherein said power device includes hydraulic power cylinder units each having a cylinder fixedly secured to said head plate; a piston slidably received in the respective cylinder; a piston rod attached to the respective piston and projecting from the respective cylinder; said pull rod means including a plurality of pull rods; at least two of said pull rods being upper pull rods and having their longitudinal axis lying at least approximately in said plane defined by said guide track; each said piston rod being connected to a separate one of said pull rods; a first spherical bearing connecting said guide carrier with said end plate for swivelably suspending said end plate from said guide carrier; and second spherical bearings each connecting said end plate with a separate one of said pull rods for swivelably securing said end plate to said pull rods; the center of said first spherical bearing lying in a vertically oriented single plane containing a vertical axis passing through the center of gravity of said end plate; whereby said pull rods and said hydraulic power cylinder units are free from force-transmitting connections with said machine frame for substantially isolating said machine frame from forces generated by said hydraulic power cylinder units.

4,196,085

DIALYSIS SOLUTION HANDLING DEVICE

Calvin A. Saravis, Boston, Mass., assignor to The United States of America as represented by the Department of Health, Education and Welfare, Washington, D.C.

Filed Jun. 9, 1976, Ser. No. 694,396
Int. Cl.[2] B01D *13/00*
U.S. Cl. 210—232 **10 Claims**



1. A portable handling device comprising
a rod-like member having a reduced portion at one end and an enlarged bulb-like element at the lower end of said reduced portion, a removable liquid receiving member, means to sealingly secure said liquid receiving member to said rod-like member over said reduced portion to define a clearance space therebetween, and
conduit means including a cup-like element rigid with the other end of the rod-like member having releasable gripping and sealing means extending axially and of internal size the same as the external size of a standard sized test tube to supportingly and sealingly engage on its interior surface circumferentially and axially the upper end of a standard sized test tube,
said rod-like member being formed with passage means communicatively connecting the interior of said conduit means to said clearance space, whereby liquid from the test tube will drain to said clearance space and into said liquid receiving member when the rod member is inverted with the test tube upper end supportingly engaged by said test tube engaging means.

4,196,086

FILTER-PURIFIER CARTRIDGE

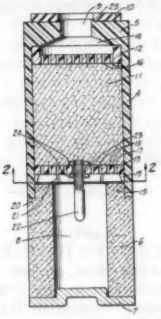
Isadore Turetsky, 23940 Welby Way, Canoga Park, Calif. 91307

Filed Feb. 2, 1979, Ser. No. 9,604

The portion of the term of this patent subsequent to Aug. 15, 1995, has been disclaimed.

Int. Cl.[2] B01D *23/06, 27/02, 27/04*

U.S. Cl. 210—232 **3 Claims**



1. A filter-purifier cartridge for fluids, comprising: A manually separable and manually replaceable hollow cylindrical purifier element having inlet and outlet means, a top wall at one end, said inlet means at the other end, a concentric passage through said top wall, said passage being the discharge port of said cartridge, a frictional seal retained by said top wall and encircling said passage, purifying medium disposed between two separable and replaceable foraminous members within the hollow cylinder of said purifier element; said purifier element disposed axially and having its inlet end section coupled to one end section of a tubular filter, a closure disposed at the uncoupled end of said tubular filter; a chamber intermediate said concentric passage and one foraminous member within the hollow cylinder of said purifier element; the fluid stream within the hollow core of said tubular filter communicating with the concentric passage through said top wall via the interior of said purifier element wherein said purifying medium is contained, and said chamber, through said couple.

4,196,087

FLOATING, SURFACE LIQUIDS RETRIEVAL SYSTEM

Ellison T. Gordon, c/o Anderson, Toledano & Courtney, 225 N. Columbia St., P.O. Box 120, Covington, La. 70433

Filed May 12, 1978, Ser. No. 905,383

Int. Cl.[2] E02B *15/04*

U.S. Cl. 210—242 S **12 Claims**

1. A buoyant apparatus for collecing liquids floating on the surface of water, comprising:

a. a basic body having an internal liquid collecting chamber having a flotation means associated therewith for providing flotation to said body;

b. at least one intake port located adjacent to and in communication with said collecting chamber arranged to allow for the passage of the liquid to said collecting chamber;

c. a floating device connected to said basic body for pulling the surface liquids at a distance inwardly to said intake port. comprising

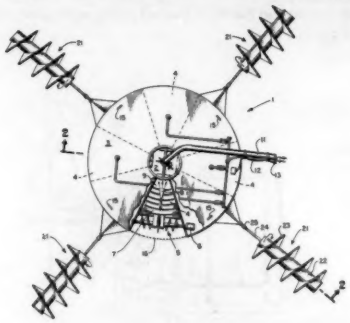
i. a motor associated with said device;

ii. rotatable shaft means connected to said motor for being driven by said motor and extending at least generally horizontally out radially away from said base body:

iii. buoyant means connected to said shaft for floating said screw device on the water; and

iv. screw vane structure means circling the outside surface of said shaft means and protruding above the water line for contacting the surface liquids and driving them inwardly to said intake port when said shaft means is rotated;

d. lateral, rotatable, driven means at said intake port for driving the liquid through said intake port, said driven means comprising a rotatable shaft located laterally across



and at the entry of said intake port, said shaft carrying liquid driving vanes for rotation therewith; and

e. liquid pick-up means in said collecting chamber including vacuum line for sucking up the liquids for pick-up and ultimate removal of the liquids from the water area.

4,196,088

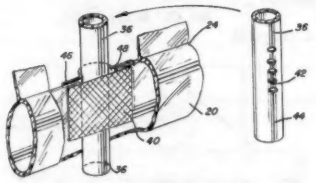
CONNECTION MEMBER

David V. Bacehowski, Wildwood, and Armand R. VanBaelen, Rolling Meadows, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Oct. 3, 1977, Ser. No. 838,706

Int. Cl.[2] B01D *35/02*

U.S. Cl. 210—435 **6 Claims**



1. In a connection of a tubular member with a flexible plastic container, an aperture in the wall of said flexible plastic container, said tubular member being positioned adjacent said aperture with the axis of said tubular member being generally parallel to the wall of the flexible plastic container defining said aperture, second apertures defined in the side wall of said tubular member being in communication with said container aperture, and an outer wall sealingly surrounding the portion of said tubular member adjacent said aperture to prevent leakage therefrom.

4,196,089

PREPARATION OF OVERBASED MAGNESIUM SULFURIZED PHENATES

Charles L. Pitzer, North Muskegon, Mich., and Norman Jacobson, Oak Ridge, N.J., assignors to Witco Chemical Corporation, New York, N.Y.

Filed Jun. 20, 1978, Ser. No. 917,215

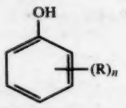
Int. Cl.[2] C10M *1/40;* **C07C** *37/00*

U.S. Cl. 252—42.7 **8 Claims**

1. A process for preparing overbased magnesium sulfurized

hydrocarbyl-substituted phenol compositions having a total base number in the range of about 200 to about 275 which comprises:

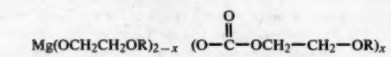
(a) providing a solution in a high boiling polar solvent in the form of a lower (C_1-C_6) alkyl monoether of a lower glycol of an acidic sulfurized aliphatic hydrocarbyl-substituted phenol in which the aliphatic hydrocarbyl phenol which is sulfurized is represented by the formula



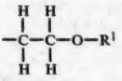
where R is a straight or branched chain, saturated or unsaturated, aliphatic hydrocarbon radical having from 6 to 30 carbon atoms, and n is an integer having a value of 1 or 2, said aliphatic hydrocarbyl phenol having a total from 8 to 40 carbon atoms in the aliphatic hydrocarbyl radicals thereof;

(b) adding to said solution, under conditions of agitation and heat to a temperature falling in the range up to about reflux temperature, magnesium oxide in an amount sufficient to effect substantially complete neutralization of the acidic sulfurized aliphatic hydrocarbyl-substituted phenols whereby to produce a magnesium sulfurized aliphatic hydrocarbyl-substituted phenol; and

(c) then effecting overbasing by admixing with said neutralized admixture, in the presence of a promoter selected from the group of water, ammonia and aliphatic amines having active hydrogen, a magnesium alkoxide-carbonate complex having the following formula



where R is selected from the group consisting of (1) C_1 to C_6 alkyl groups and (2) an organic radical having the formula



where R^1 is a C_1 to C_4 alkyl group and where x is a number varying from 0.5 to 1.5, said complex being added in an amount to produce a final overbased magnesium sulfurized aliphatic hydrocarbyl-substituted phenol composition which, after removal of volatile organic solvent, has a total base number in the range of about 200 to 275.

4,196,090

HYDROCARBYLPOLY(OXYALKYLENE) AMINOPHOSPHORYLAMIDO ESTERS AND LUBRICATING OIL COMPOSITIONS CONTAINING THE ESTERS

Jennifer E. Lilburn, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Sep. 5, 1978, Ser. No. 939,305

Int. Cl.[2] C10M *1/36, 1/46;* C07F *9/24*

U.S. Cl. 252—49.9 **13 Claims**

1. The compound which is a hydrocarbylpoly(oxyalkylene) aminophosphorylamido ester; said compound being the amide of a polyamine and the ester of a hydrocarbylpoly(oxyalkylene) alcohol, wherein said hydrocarbyl group contains from 1 to about 30 carbon atoms and said polyamine contains from 2 to about 12 amine nitrogen atoms and from 2 to about 40 carbon atoms.

4,196,091

LACTAM CARBOXYLIC ACIDS, THEIR METHOD OF PREPARATION AND USE

Raymond C. Schlicht, Fishkill, N.Y., assignor to Texaco Inc., White Plains, N.Y.

Filed Dec. 27, 1977, Ser. No. 865,107

Int. Cl.[2] C10M *1/32*

U.S. Cl. 252—51.5 A **11 Claims**

1. A lubricant oil composition comprising an oil of lubricating viscosity, and an effective dispersant and rust inhibiting amount of an isomeric mixture of a lactam acid, said lactam acid being selected from the group consisting of:

1. 2(3) polybutenyl-3-carboxy-4-phenyl-5(N,N-dimethylaminopropyl) butyrolactam, in which said polybutenyl radical has from 10 to 300 carbon atoms,
2. 1,2-ethylene bis[2(3) polybutenyl-3-carboxy-4-phenyl-butyrolactam-5] in which said polybutenyl radical has from 10 to 300 carbon atoms, and
3. 1,6-hexylene bis[2(3) polybutenyl-3-carboxy-4-phenyl-butyrolactam-5] in which said polybutenyl radical has from 10 to 300 carbon atoms.

5. A lactam acid selected from the group consisting of:

1. 2(3) polybutenyl-3-carboxy-4-phenyl-5(N,N-dimethylaminopropyl) butyrolactam, in which said polybutenyl radical has from 10 to 300 carbon atoms,
2. 1,2-ethylene bis[2(3) polybutenyl-3-carboxy-4-phenyl-butyrolactam-5] in which said polybutenyl radical has from 10 to 300 carbon atoms, and
3. 1,6-hexylene bis[2(3) polybutenyl-3-carboxy-4-phenyl-butyrolactam-5] in which said polybutenyl radical has from 10 to 300 carbon atoms.

4,196,092

CONDITIONING AGENT FOR FROTH FLOTATION OF FINE COAL

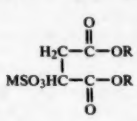
Samuel S. Wang, Cheshire; Morris E. Lewellyn, Stamford, and Eugene L. Smith, Jr., Milford, all of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Apr. 17, 1978, Ser. No. 897,230

Int. Cl.[2] C11D *7/34, 9/32*

U.S. Cl. 252—61 **3 Claims**

1. A conditioning agent which consists essentially of from about 1 to about 99 weight percent of a mixture of C_4-C_8 alcohols, correspondingly, from about 99 to about 1 weight percent of a bis(alkyl)ester of a sulfosuccinic acid salt of the general structure



wherein R is a linear or branched chain alkyl group of 3 or 4 carbon atoms and M is a cation providing a water-soluble salt and, optionally, a fuel oil.

4,196,093

PRODUCTION OF DETERGENT COMPOSITIONS

David E. Clarke; James F. Davies, both of Wirral; John B. Tune, Higher Bebington, and Raymond J. Wilde, Wirral, all of England, assignors to Lever Brothers Company, New York, N.Y.

Filed May 15, 1978, Ser. No. 905,681

Claims priority, application United Kingdom, May 18, 1977, 20933/77

Int. Cl.[2] C11D *7/18, 7/12*

U.S. Cl. 252—99 **15 Claims**

1. In a process for making a particulate detergent composition comprising from about 10% to about 75% of an alkali metal carbonate, from about 1% to about 40% of a detergent

active compound and from about 5% to about 50% of finely divided calcium carbonate having a surface area of at least about 10 m^2/g, the improvement consisting essentially of contacting sodium or potassium carbonate or a mixture thereof in particulate form with a liquid or pasty detergent active compound or mixture thereof which contains a major proportion of a nonionic detergent compound and admixing the calcium carbonate in powder form with the alkali metal carbonate particles so that the calcium carbonate adheres thereto.

4,196,094

REMOVING DEPOSITS FROM SURFACES IN WOOD PULP PROCESSING APPARATUS

Howard D. Johnson, and Kenneth J. Snyder, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Dec. 22, 1978, Ser. No. 972,308
Int. Cl.² C11D 7/54
U.S. Cl. 252—103 **8 Claims**

1. A method of removing solid deposits from the surfaces of wood pulp processing apparatus said deposits being produced by the evaporation of black liquor in said apparatus said method consisting essentially in contacting said solid black liquor deposits with an aqueous solution consisting essentially of at least one alkali metal hypochlorite selected from the group consisting of sodium hypochlorite, potassium hypochlorite and mixtures thereof and at least one alkali metal hydroxide selected from the group consisting of sodium hydroxide, potassium hydroxide and mixtures thereof at a temperature and for a time sufficient to remove said deposits wherein said alkali metal hypochlorite is present in said solution in an amount in the range of from about 1 to about 10 percent by weight of said solution and said alkali metal hydroxide is present in said solution in the range of from about 0.05 to about 30 percent by weight of said solution.

4,196,095

DRY BLENDING USING MAGNESIUM STEARATE

Francis R. Cala, North Brunswick, and Anthony E. Winston, East Brunswick, both of N.J., assignors to Church & Dwight Co. Inc., New York, N.Y.

Filed Jul. 11, 1978, Ser. No. 923,630
Int. Cl.² C11D 3/08, 3/10, 3/12
U.S. Cl. 252—140 **3 Claims**

1. In a dry blended carbonate-based detergent or detergent additive composition containing, in weight percent of the composition, from about 30 to 90% by weight of an unhydrated or partially hydrated hydratable detergent builder salt, at least one third of said composition being sodium carbonate, from about 5 to about 10% by weight of sodium silicate, and from 5 to about 30% by weight of a synthetic anionic, nonionic, amphoteric or zwitterionic detergent active compound,

the improvement comprising including in said composition a dispersing amount of from 0.1 to about 2% by weight of magnesium stearate.

2. In a dry blended, carbonate-based detergent composition containing in percent by weight of the composition, from about 30 to about 90% by weight of an unhydrated or partially hydrated hydratable detergent builder salt,

at least half of said builder salt being sodium carbonate, and from 5 to about 30% by weight of a synthetic anionic or nonionic detergent active compound or mixtures thereof,

the improvement comprising including a dispersing amount of magnesium stearate in said composition in the range of from about 0.1 to about 10%.

4,196,096

PROCESS FOR REGENERATION OF RHODIUM HYDROFORMYLATION CATALYSTS

John L. Dawes, and Thomas J. Devon, both of Longview, Tex., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 12, 1979, Ser. No. 11,604
Int. Cl.² B01J 27/28
U.S. Cl. 252—414 **12 Claims**

1. A method of regenerating a rhodium hydroformylation catalyst which includes:

(a) adjusting the aldehyde content of the catalyst to be regenerated so as to have at least one mole of aldehyde present per mole of rhodium and ligand present in the catalyst,

(b) treating the aldehyde-containing catalyst with an oxygen-containing gas at a temperature less than the boiling point of the aldehyde,

(c) removing any solid material formed during the oxidation, and

(d) adjusting the ligand to rhodium ratio of the regenerated catalyst as required for use in the hydroformylation reaction.

4,196,097

ZIEGLER CATALYSTS

Ferdinando Ligorati, Usmate; Renzo Invernizzi; Carlo Collu, both of Milan, and Maurizio Fontanesi, Concorezzo, all of Italy, assignors to Euteco S.p.A., Milan, Italy

Filed Oct. 6, 1977, Ser. No. 839,958
Claims priority, application Italy, Oct. 19, 1976, 28521 A/76
Int. Cl.² C08F 4/02
U.S. Cl. 252—429 C **22 Claims**

1. In a Ziegler catalytic system comprising the combination of an organo-metallic compound of a metal of Group I, II or III of the Periodic System of the Elements according to Mendeleef and a compound of a heavy metal of Group IV, V or VI of said Periodic System supported on a carrier, the improvement comprising said carrier being an activated amorphous alumina or alumino-silicate containing from 0.3 to 30% by weight of one or more salts of metals from Group IIb, IIIa, VIb and VIII or said Periodic System with one or more oxygenated inorganic anions selected from the group consisting of sulphate, sulphite, phosphate, chlorate, perchlorate and halogen-sulphonate anions, or a mixture of the latter with one or more salts of said metals from Groups IIb, IIIa, VIb and VIII with one or more non-oxygenated halogen anions, said salts being introduced into the amorphous alumina or alumino-silicate by contacting the latter with one or more solutions of said salts and said alumina or alumino-silicate being then activated by calcination at a temperature of from 250° C. to 700° C.

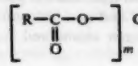
4,196,098

PROCESS FOR PREPARING A POLYMERIZATION CATALYST

Yu-Tang Hwang, Clinton, Iowa, assignor to Chemplex Company, Rolling Meadows, Ill.

Filed Jun. 10, 1976, Ser. No. 694,780
Int. Cl.² B01J 21/04, 21/08, 23/26, 31/12
U.S. Cl. 252—430 **18 Claims**

1. The process of preparing an active polymerization catalyst comprising the steps of initially mixing with a finely divided, difficultly reducible, inorganic support selected from the group consisting of silica, alumina, thoria, zirconia, titania, magnesia, and mixtures and composites thereof a chromium carboxylate containing at least four carbon atoms in each carboxylate group and essentially of the formula selected from the group consisting of



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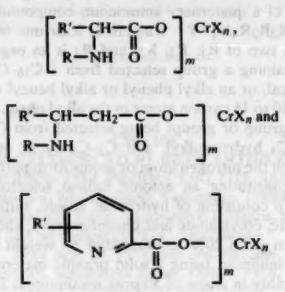


wherein R and R' are each selected from the group consisting of alkyl, alkenyl, aryl, cycloalkyl, cycloalkenyl and arylalkyl radicals and combinations of these radicals with each R containing 3–30 carbon atoms and each R' containing 0–20 carbon atoms and R' can be hydrogen and each R and R' containing a corresponding valence-satisfying number of hydrogen atoms, m is a whole number of 1 to 3, n is a whole number of 0 to 2 and m plus n is a whole number of 2 to 3, and X is a negative group relative to chromium, and activating the resulting mixture by heating to and at an elevated temperature of from about 600°–2000° F. in a non-oxidizing atmosphere.

4,196,099

CATALYST COMPRISING A METAL SUBSTRATE

James B. Hunter, Newton Square; George McGuire, West Chester; Alfred F. D'Alessandro, Havertown, and Larry L Lawlor, Glenmoore, all of Pa., assignors to Matthey Bishop, Inc., Malvern, Pa.

Filed Feb. 10, 1978, Ser. No. 876,565

Int. Cl.[2] B01J *27/14, 23/08, 35/00*

U.S. Cl. 252—437 **4 Claims**

1. A supported catalyst for use at a temperature above 1200° F. consisting essentially of a metal or alloy substrate which itself is not heat or oxidation resistant at a temperature above 1200° F.; a heat-cured oxidation resistant coating applied to said substrate, said coating being applied as an aqueous coating composition which is curable into water-insoluble oxidation resistant form by heating at a temperature between about 250° F. and 500° F. and which consists essentially of a dispersion of aluminum metal powder in an aqueous chromate salt solution and a ceramic aluminum phosphate binder and amine modifier; a high surface area refractory oxide washcoat over said oxidation resistant coating and a catalytically active platinum group metal deposited on said washcoat.

4,196,100

CATALYST USEFUL FOR METHANATION AND PREPARATION THEREOF

John K. Pargeter, Warwick, and Umar M. U. Ahmad, Middletown, both of N.Y., assignors to The International Nickel Co., Inc., New York, N.Y.

Filed Jan. 10, 1978, Ser. No. 868,406

Int. Cl.[2] B01J *27/02, 23/70*

U.S. Cl. 252—439 **45 Claims**

1. An unsupported particulate nickel-containing catalyst material especially useful for methanation reactions composed of, by weight, up to about 13% oxygen, less than about 1% sulfur and the balance predominantly nickel, said catalyst material having an average particle size of about 0.25 to about 1.2 mm. with a minimum of fines, said catalyst particles being a composte material consisting essentially of a nickel oxide core and a thin adherent, coherent layer of nickel on said core, the nickel oxide core having been formed as unsupported nickel oxide particles having an average size of about 0.25 to about 1.2 mm. by fluid-bed roasting and the nickel layer having been developed under reducing conditions from the nickel oxide particles, said nickel layer being characterized by the presence of microcapillary pores interconnecting with each other and with the outer surface of the particles and by a microstructure substantially as shown in FIG. 5B.

4,196,101

PROCESS FOR FORMING ALUMINA PELLETS CONTAINING TITANIA AND PROCESS FOR PRODUCING HYDRODESULFURIZATION CATALYST CONTAINING THE PELLETS

Geoffrey R. Wilson, Westlake Village, and Masami Kayamoto, Whittier, both of Calif., assignors to Filtrol Corporation, Los Angeles, Calif.

Continuation-in-part of Ser. No. 671,333, Mar. 29, 1976, abandoned. This application Feb. 3, 1978, Ser. No. 874,753

Int. Cl.[2] B01J *21/04, 21/06, 23/16, 23/74, 27/04*

U.S. Cl. 252—439 **10 Claims**

1. A process for forming shaped alumina pellets which comprises mixing alumina hydrate with water and a hydrolyzeable titanium compound, hydrolyzing the titanium compound under substantially non-acid conditions to form hydrated titanium oxide, forming said mixture into a pellet, drying and calcining said pellet.

4,196,102

CATALYSTS FOR DEMETALLIZATION TREATMENT OF HYDROCARBONS SUPPORTED ON SEPIOLITE

Masayoshi Inooka, Yokohama; Motoyoshi Wakabayashi, Kawasaki; Masatoshi Matsuda; Masaaki Kasuya, both of Yokohama; Yoshihoro Ohguchi, Ebina; Munekazu Nakamura, Kamakura, and Tatsuo Morimoto, Yokohama, all of Japan, assignors to Chiyoda Chemical Engineering & Construction Co., Ltd., Yokohama, Japan

Continuation of Ser. No. 748,752, Dec. 9, 1976, abandoned. This application May 19, 1978, Ser. No. 907,586

Claims priority, application Japan, Dec. 9, 1975, 50-145902; Feb. 2, 1976, 51-9247; Mar. 19, 1976, 51-30628; Sep. 3, 1976, 51-104955; Sep. 14, 1976, 51-110417

Int. Cl.[2] B01J *29/00*

U.S. Cl. 252—457 **35 Claims**

14. A hydrodemetallization catalyst comprising an effective amount of one or more catalyst metal components supported on sepiolite, the catalyst metal being selected from the group consisting of the metals of the IIb group and the transition metals of the Periodic Table, and wherein said catalyst is prepared according to a process comprising the steps of:

(a) grinding sepiolite to a fine powder, 50% or more by weight of which has a particle size of 100-mesh or finer;

(b) adding water to the ground sepiolite to adjust the water content thereof to about 20 to about 350% by weight;

(c) kneading the resulting mixture;

(d) air-drying or heat-treating the moist kneaded sepiolite at a temperature lower than about 1000° C.; and

(e) supporting one or more of said catalyst metal components on the sepiolite, the sequence of steps being (a), (b), (c), (d), and (e) or (e), (a), (b), (c) and (d).

19. The hydrodemetallization catalyst of claim 14, wherein step (e) comprises a two-stage treatment consisting essentially of a first step of contacting the sepiolite with an acidic aqueous solution containing ions of one or more metals selected from the group consisting of the metals of the Ib, IIb, IIIa and iron groups of the Periodic Table, and a second step of contacting the resulting sepiolite with a basic aqueous solution containing ions of one or more metals selected from the group consisting of Cu and the metals of the Va, VIa and iron groups of the Periodic Table.

4,196,103

COLORED DETERGENTS

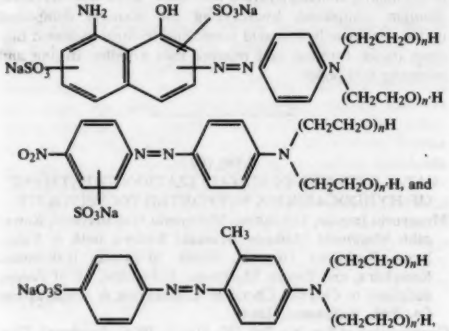
Virgil J. Richter, West Orange, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 440,786, Feb. 8, 1974, abandoned, which is a continuation of Ser. No. 154,692, Jun. 18, 1971, abandoned. This application Nov. 13, 1975, Ser. No. 631,590

Int. Cl.[2] **C11D** *1/02, 1/94*

U.S. Cl. 252—541 **4 Claims**

1. A multi-colored, particulate detergent composition consisting essentially of from 5 to 30% of a synthetic organic detergent selected from the group consisting of anionic detergents and nonionic detergents and mixtures thereof, from 10 to 50% of a detergent builder salt with over 80% of the particles of said composition in the 6 to 200 mesh range, and 2–13% water the colored particulate component of the composition consisting essentially of builder salt constituting from 0.1 to 20% of the composition and being substantially in the 6 to 140 mesh range, with the color of said colored particulate component being provided by a coating of a fugitive dye or mixture of such dyes of the formula selected from the group



wherein n and n' are from 15 to 75, the composition having a pH in a 0.1% aqueous solution in the range of 6 to 10, said coating including a polymeric material selected from the group consisting of polyvinyl alcohol, polyvinyl pyrrolidone, polyacrylic acid salts, sodium carboxymethyl cellulose and polyacrylamide, said fugitive dye comprising from 0.001 to 0.1% by weight of said composition and said polymeric material comprising from 0.01 to 1.0% by weight of said composition.

4,196,104

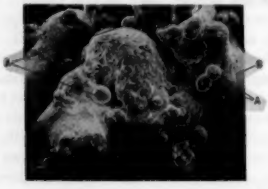
PROCESS FOR PRODUCING ANTISTATIC, FABRIC-SOFTENING DETERGENT COMPOSITION

Patrick C. Oguagha, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 836,811, Sep. 26, 1977, abandoned. This application Sep. 25, 1978, Ser. No. 945,366

Int. Cl.[2] **C11D** *7/32, 17/00, 11/00*

U.S. Cl. 252—542 **31 Claims**



1. A process for preparing a detergent product for conditioning fabrics comprising the steps of

(a) mixing intimately

(i) from about 80% to about 20% by weight of the particles of a quaternary ammonium compound of formula $[R_1R_2R_3R_4N]^+Y^-$ wherein at least one but not more than two of R_1, R_2, R_3, and R_4 is an organic radical containing a group selected from a C_{16}–C_{22} aliphatic radical, or an alkyl phenyl or alkyl benzyl radical having 10 to 16 carbon atoms in the alkyl chain, the remaining group or groups being selected from C_1–C_4 alkyl, C_2–C_4 hydroxyalkyl, and C_3–C_8 cyclic structures in which the nitrogen atom or atoms form part of the ring, Y constituting an anionic radical selected from the group consisting of hydroxide, halide, sulfate, methylsulfate, ethylsulfate and phosphate ions, and

(ii) from about 20% to about 80% by weight of a dispersion inhibitor, being a solid organic material having a solubility in water of 50 ppm maximum at 25° C. and a softening point in the range of 100° F. to 200° F., said material being selected from the group consisting of paraffinic waxes, cyclic and acyclic mono- and polyhydric alcohols, substituted and unsubstituted aliphatic carboxylic acids, esters of the foregoing alcohols and acids, C_3–C_4 alkylene oxide condensates of any of the foregoing materials and mixtures thereof,

substantially all of said intimate mixture having a solubility in water of about 50 ppm maximum at 25° C. and having a softening point of about 100° F. to about 200° F., and

(b) spraying said intimate mixture in a molten state at a temperature of from about 160° F. to about 250° F. and at a pressure of from about 10 psi to about 100 psi through a spray nozzle, and if said spray nozzle is a two-fluid atomizer nozzle, the second fluid is air at a temperature of from about 180° F. to about 270° F. and a pressure of from about 20 psi to about 150 psi, forming generally spherical particles from about 10 microns to about 500 microns in size, partially embedding in and attaching to spray-dried granules at a temperature of from about 50° F. to about 160° F. at a distance from about 6 inches to about 72 inches from said nozzle, so that the intimate mixture of the quaternary ammonium compound and the organic dispersion inhibitor comprises from about 3% to about 40% by weight, and the spray-dried granules comprise from about 97% to about 60% by weight, of the composition formed by the attachment, said spray-dried granules comprising

(i) from about 99% to about 5% by weight of surfactant selected from the group consisting of anionic, nonionic, ampholytic and zwitterionic surfactants, and mixtures thereof,

(ii) from about 1% to about 95% by weight of a mixture of

(1) from about 1% to about 100% by weight of a detergency builder, and

(2) up to about 99% by weight of an inert inorganic water-soluble salt.

4,196,105

RECOVERY OF POLYSTYRENE USING LIQUID SULFUR DIOXIDE

Josef Kubát, Solparksvägen 3, 171 35 Solna; Kaj B. Hedman, Olivedalsgaten e, 413 10 Göteborg, and Per L. Albihn, Övre Olskroksgatan 12, 416 67 Göteborg, Sweden

Filed Mar. 17, 1978, Ser. No. 888,155

Claims priority, application Sweden, Mar. 17, 1977, 7703084

Int. Cl.[2] **C08J** *11/04*

U.S. Cl. 260—2.3 **8 Claims**

1. A process for the recovery of polystyrene from polystyrene-containing starting material comprising the steps of (1) contacting the polystyrene-containing starting material with liquid sulfur dioxide whereby the polystyrene is dissolved and the polystyrene-sulfur dioxide system forms two layers, an upper layer which contains low and high molecular weight fractions of polystyrene and a lower layer which contains liquid sulfur dioxide which is practically free from polystyrene, said lower layer being reusable in the process and (2) boiling

off the sulfur dioxide from the polystyrene-containing upper layer whereby the polystyrene is recovered.

4,196,106

FIBER-REINFORCED RUBBER ARTICLE AND PROCESS FOR PRODUCING THE SAME

Tetsuro Matsuura, Narita; Shinji Yamamoto, Ichihara; Denichi Oda, Ichihara, and Yasuo Matsumori, Ichihara, all of Japan, assignors to Ube Industries, Ltd., Ube, Japan

Filed Sep. 29, 1977, Ser. No. 837,989
Claims priority, application Japan, Oct. 7, 1976, 51-119865
Int. Cl.[2] C08L *7/00, 9/00, 11/00*
U.S. Cl. 260—5 **12 Claims**

1. A process for producing a fiber-reinforced rubber article, which comprises:

(1) preparing a composition comprising a matrix containing a rubber material selected from the group consisting of natural rubber, cis-1,4-polybutadiene, polyisoprene, polychloroprene, styrene-butadiene copolymers, isoprene-isobutylene copolymers, ethylene-propylene-diene terpolymers, and mixtures of two or more of the above-mentioned polymers; a vulcanizing agent, and reinforcing staple fibers which consist of 1,2-polybutadiene containing 80% by weight or more of 1,2-structure and are uniformly dispersed in said matrix, said reinforcing staple fibers each having a cross-sectional diameter of from 4 to 90 microns and a length of from 1 to 200 mm and being present in an amount of from 1 to 20 parts by weight per 100 parts by weight of said rubber matrix, and;

(2) shaping and vulcanizing said composition at a temperature of at least 10° C. below the melting point of said 1,2-polybutadiene staple fibers to form a shaped, vulcanized article.

4,196,107

SEMI-SOLID WATER-BASED COATING COMPOSITIONS

James E. Jones, Lower Burrell; Rodger G. Temple, Gibsonia; Jerome A. Seiner, Pittsburgh; Sharon L. Young, Butler, and William G. Boberski, Gibsonia, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jun. 5, 1978, Ser. No. 912,807
Int. Cl.[2] C08L *1/28*
U.S. Cl. 260—17 R **23 Claims**

1. A gelled coating composition, capable of application and flow on a solid substrate, comprising:

(a) a water reducible, film-forming polymer,

(b) water,

(c) an electrolyte, and

(d) a colloidal gelling agent, gelable by interaction with said electrolyte, in an amount sufficient, when substantially interacted with said electrolyte, to gel the composition to form a stable semi-solid or solid and to provide a composition reducible to a coating application viscosity upon the application of a relatively small shearing force, at a relatively small shearing rate,

(e) which gelled coating composition, after being sheared to a coating application viscosity, does not recover substantial colloidal gelling agent-electrolyte contributed gel structure.

4,196,108

CAPROLACTAM COPOLYAMIDES USEFUL AS HOT MELT ADHESIVES FOR TEXTILES

Adrien G. Hinze, Dordrecht; Hendrik G. Stigter, Berkenwoude, and Maria L. A. Slettenhaar-von Piekartz, Gouda, all of Netherlands, assignors to Emery Industries, Inc., Cincinnati, Ohio

Filed Feb. 21, 1978, Ser. No. 879,028
Claims priority, application United Kingdom, Feb. 18, 1977, 6945/77
Int. Cl.[2] C08L *91/00;* **C08G** *69/36*
U.S. Cl. 260—18 N **5 Claims**

1. A polyamide resin useful as a hot melt adhesive consisting essentially of recurring units obtained by reacting in an inert atmosphere at a temperature of 180°-300° C. while removing water of reaction

(a) 10-50% by weight, based on the total composition, caprolactam;

(b) 10-50% by weight, based on the total composition, of a polyamide or polyamide salt derived from hexamethylene diamine and an alpha-omega dicarboxylic acid of the formula HOOC—R—COOH where R is a C_4-C_7 bivalent aliphatic hydrocarbon radical;

(c) 10-50% by weight, based on the total composition, of a polyamide or polyamide salt derived from nonamethylene diamine and an alpha-omega dicarboxylic acid of the formula HOOC-R_1—COOH where R_1 is a C_7-C_{10} bivalent aliphatic hydrocarbon radical; and

(d) an amount up to 50% by weight, based on the total composition, of a polymeric fatty acid and alpha-omega aliphatic diamine of the formula H_2N—R_2—NH_2 where R_2 is a C_5-C_7 alkylene radical, a polyamide or polyamide salt derived from said polymeric fatty acid and diamine.

4,196,109

PHENOLIC RESIN-TRIAZINE MODIFIER FOR ALKYD RESINS

Deno Laganis, Schenectady, and Eric V. Garis, Scotia, both of N.Y., assignors to Schenectady Chemicals, Inc., Schenectady, N.Y.

Filed Aug. 17, 1978, Ser. No. 934,795
Int. Cl.[2] C09D *3/52, 3/56, 3/66*
U.S. Cl. 260—20 **29 Claims**

1. A composition comprising

(A) an alkyd resin which is an oil or fatty acid modified alkyd;

(B) a phenolic resin selected from the group consisting of (a) and (b) wherein

(a) is the condensation product of formaldehyde and a mixture of (1), (2) and (3), wherein

(1) is at least one ortho- or para-mono alkyl phenol and is present in an amount ranging from 50 to 90 mole percent of said mixture, wherein said alkyl contains 1 to 12 carbon atoms;

(2) is a compound which contains at least two phenolic hydroxy groups and is present in an amount ranging from 3 to 20 mole percent of said mixture; and

(3) is ortho-hydroxybenzoic acid, para-hydroxybenzoic acid, or an admixture thereof and is present in an amount ranging from 7 to 40 mole percent of said mixture, and

(b) is a condensation product of formaldehyde and (4) and (5), wherein

(4) is at least one ortho- or para-mono alkyl phenol, wherein said alkyl contains 1 to 12 carbon atoms, and

(5) is 4,4'-bis(4-hydroxyphenyl) pentanoic acid or isomers thereof and is 3 to 15 mole percent of the admixture of (4) and (5); and

(C) a triazine derivative, which is the reaction product of a melamine or benzoguanamine and formaldehyde and which contains as substituents at least two free methylol groups or at least one ether derivative of at least one of

said methylol groups; at least one condensation product of said derivative; or admixtures thereof;

wherein said phenolic resin (B) is present in an amount which is greater than 10% by weight of said composition;

wherein the total weight of said phenolic resin (B) and said triazine derivative or condensation product (C) is at least 22% by weight of said composition;

wherein (B) is present in an amount ranging from greater than 10 to 50 percent by weight of said composition and (C) is present in an amount ranging from 10–50 percent by weight of said resin; and

wherein heat treatment of said composition at a temperature effective to cure it results in a product which exhibits a moisture resistance of at least 25,000 megohms.

4,196,110
STABILIZED MOULDING MATERIAL

Gerd Abeler, Griesheim uber Darmstadt, and Rainer Schneider, Bensheim-Auerbach, both of Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

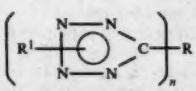
Filed Dec. 20, 1978, Ser. No. 971,272

Claims priority, application Switzerland, Dec. 29, 1977, 16182/77

Int. Cl.[2] C08K *5/09, 5/13, 5/15, 5/34*

U.S. Cl. 260—23 XA **11 Claims**

1. A moulding material consisting of a chlorine-containing thermoplastic which is a homopolymer or copolymer of vinyl chloride or a postchlorinated polyolefin into which there is incorporated an effective amount of a tetrazole heat stabiliser, said moulding material containing an epoxy plasticiser and/or at least one carboxylate or phenolate of barium, cadmium, zinc or calcium and, as heat stabiliser, at least one mono- or bistetrazole of the formula I



(I)

wherein R^1 represents a hydrogen atom, alkyl of 1 to 4 carbon atoms, cycloalkyl of 5 or 6 carbon atoms, phenyl, or phenyl which is substituted by alkyl of 1 to 4 carbon atoms or halogen, n is 1 or 2, and, when n is 1, R represents alkyl of 1 to 20 carbon atoms which can be interrupted by oxygen, —NY—, sulfur, SO_2 and/or CO_2, or substituted by —OH or —SH, or represents phenyl or benzyl which can be substituted by alkyl of 1 to 4 carbon atoms, or is cycloalkyl of 5 or 6 carbon atoms, and, when n is 2, R represents a direct bond, alkylene of 1 to 10 carbon atoms which can be substituted by phenyl, benzyl, hydroxyl, alkoxy of 1 to 4 carbon atoms, acyloxy of 1 to 20 carbon atoms, phenylsulfonyl or alkylsulfonyl, or interrupted by oxygen, sulfur, SO_2, CO_2 or —NY—, or represents alkylidene of 1 to 10 carbon atoms, phenylene, benzylene or xylylene, and Y represents hydrogen, alkyl of 1 to 4 carbon atoms, phenyl, benzyl, naphthyl, cyclohexyl or acyl of 1 to 20 carbon atoms.

4,196,111
CHEMICALLY REDUCING RESIDUAL ACRYLONITRILE MONOMER IN NITRILE POLYMERS AND SHAPED PACKAGING MATERIALS FORMED THEREFROM

I. Luis Gomez, Longmeadow, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed Nov. 6, 1978, Ser. No. 957,881

Int. Cl.[2] C08F *6/00*

U.S. Cl. 260—23 S **37 Claims**

1. In the process of melting acrylonitrile copolymer by physical working while generating free acrylonitrile monomer in the melt, the improvement which comprises having a scavenging amount of a compound selected from the group consisting of unsaturated fatty acid aldehydes, and esters formed by the reaction of a short chain olefinic alcohol containing two to four carbon atoms with a fatty acid or cyanuric acid in admixture with the copolymer during said melting to minimize the level of free acrylonitrile monomer in the copolymer.

4,196,112
WATER-SOLUBLE COATING COMPOSITION

Atsushi Kaiya, Kawasaki; Yutaka Otsuki, and Hideo Horii, both of Yokohama, all of Japan, assignors to Nippon Oil Co., Ltd., Tokyo, Japan

Division of Ser. No. 844,546, Oct. 25, 1977, which is a division of Ser. No. 518,824, Oct. 29, 1974, abandoned. This application May 1, 1978, Ser. No. 901,907

Claims priority, application Japan, Nov. 1, 1973, 48-123042

Int. Cl.[2] C08L *91/00*

U.S. Cl. 260—23.7 M **17 Claims**

1. A water-soluble coating composition comprising an adduct (1) of a butadiene lower polymer or lower copolymer (A) which has a number average molecular weight in a range of 200–10,000 and is a liquid or semi-liquid at room temperature and α,β-ethylenically unsaturated dicarboxylic acid compound (B) resulting from the reaction of said (A) and (B) at a temperature in the range of 120° to 250° C. in the presence of one or more of compounds (C) in an amount of 0.005 to 5 percent by weight of said (A), said compound (C) being selected from catechol derivatives, pyrogallol derivatives, and naphthol derivatives; a hydrophilic solvent (2) in an amount of less than 100 parts by weight to 100 parts by weight of said (A); a neutralizer (3) in a range of 0.2 to 2.0 equivalents to said (A); and an oil component (4) selected from the group consisting of animal and vegetable oils having an iodine value of 100 or more, unsaturated fatty acids and dimeric acids thereof and modified oils.

4,196,113
WATER-SOLUBLE COATING COMPOSITION

Atsushi Kaiya, Kawasaki; Yutaka Otsuki, and Hideo Horii, both of Yokohama, all of Japan, assignors to Nippon Oil Co., Ltd., Tokyo, Japan

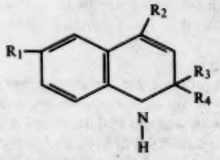
Division of Ser. No. 844,543, Oct. 25, 1977, which is a division of Ser. No. 518,824, Oct. 29, 1974, abandoned. This application May 1, 1978, Ser. No. 901,909

Claims priority, application Japan, Nov. 1, 1973, 48-123042

Int. Cl.[2] C08L *91/00*

U.S. Cl. 260—23.7 M **13 Claims**

1. A water-soluble coating composition comprising an adduct (1) of a butadiene lower polymer or lower copolymer (A) which has a number average molecular weight in a range of 200–10,000 and is liquid or semi-liquid at room temperature and α,β-ethylenically unsaturated dicarboxylic acid compound (B) resulting from the reaction of said (A) and (B) at a temperature in the range of 120° to 250° C. in the presence of at least one quinoline derivative (C) in an amount of 0.005 to 5 percent by weight of said (A), said quinoline derivative being of the general formula:



in which R_1 is a hydrogen atom or an alkoxy group having 1 to 5 carbon atoms, and R_2, R_3 and R_4 are the same or different alkyl groups each having 1 to 5 carbon atoms; a hydrophilic solvent (2) in an amount of less than 100 parts by weight to 100 parts by weight of said (A); a neutralizer (3) in a range of 0.2 to 2.0 equivalents to said (A); and an oil component (4) selected

from the group consisting of animal and vegetable oils having an iodine value of 100 or more, unsaturated fatty acids and dimeric acids thereof and modified oils.

4,196,114

PROCESS FOR PRODUCING RESIN-COATED FOUNDRY SAND

Kyohei Funabiki; Noriaki Matsushima, and Naomitsu Inouye, all of Fujieda, Japan, assignors to Sumitomo Durez Company, Ltd., Tokyo, Japan

Filed Dec. 29, 1977, Ser. No. 865,558
Claims priority, application Japan, Dec. 23, 1976, 51/154292; Aug. 4, 1977, 52/90950
Int. Cl.[2] C08L 91/06
U.S. Cl. 260—28 P 7 Claims

1. A process for producing resin-coated sand for use in a shell mold which comprises coating heated sand particles with a lubricant containing binder comprising a solid resol type phenolic resin produced by the reaction comprising condensation of reactants consisting of a phenol and a formaldehyde source followed by dehydration of the reaction mixture, and a lubricant in an amount of about 0.5 to 10 percent by weight with respect to said phenolic resin, wherein said lubricant is added prior to or during the course of the reaction to produce said solid resol type phenolic resin.

4,196,115

BLENDS OF DIFFERENT CONJUGATED DIENE/MONOVINYL AROMATIC COPOLYMERS IN BITUMINOUS BASED ROOFING AND WATERPROOFING MEMBRANES

Clarence R. Bresson, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 14, 1978, Ser. No. 942,215
Int. Cl.[2] C08L 95/00
U.S. Cl. 260—28.5 B 11 Claims

1. A composition, suitable for use as a roofing material or as a waterproofing membrane having both high and low temperature desirable properties which comprises

a. A first radial conjugated diene/monovinyl aromatic copolymer having a wt. average molecular weight (M_w) above 200,000 and a monomer ratio of from about 50/50 to about 85/15, represented by at least one of the formulas

$$(A-B)_xY \text{ or } (A-B-A)_xY$$

wherein A represents an non-elastomeric poly(monovinyl aromatic) block containing 8–18 carbon atoms per unit of the block and B represents an elastomeric poly(conjugated diene) block said diene contains 4 to 12 carbon atoms per unit of the block Y is at least one atom derived from a polyfunctional treating agent used in the formation of the radial polymers and x represents the number of functional groups of said polyfunctional treating agent and is an integer equal to at least 3;

b. A second conjugated diene monovinyl aromatic copolymer having an M_w below 200,000 and being at least one of radial and linear, when radial the formula thereof being as above given in this claim and it having an M_w in the range from 100,000 up to 200,000, and when linear represented by the formula AB, wherein A and B are as above given in this claim and having an M_w in the range of from about 75,000 up o 200,000, the ratio of the high and low M_w copolymers being in the range 13/1 to 1/13, and

c. An asphalt having a penetration grade below about 300 (ASTM D5).

4,196,116

IMPACT RESISTANT POLYPHENYLENE ETHER COMPOSITIONS CONTAINING EPDM RUBBER-MODIFIED ALKENYL AROMATIC RESINS AND HYDROGENATED DIBLOCK COPOLYMERS

William R. Haaf, Voorheesville, and Glenn D. Cooper, Delmar, both of N.Y., assignors to General Electric Company, Pittsfield, Mass.

Filed Nov. 28, 1977, Ser. No. 855,251
Int. Cl.[2] C08K 3/32, 7/14; C08L 53/00
U.S. Cl. 260—42.18 31 Claims

1. A thermoplastic composition which, after molding, has good impact resistance, said composition comprising:

(a) a polyphenylene ether resin;

(b) an alkenyl aromatic resin, that is modified with a rubbery interpolymer of a mixture of mono-olefins and a polyene by polymerizing alkenyl aromatic monomer in the presence of the rubbery interpolymer, the rubbery interpolymer being comprised of particles having a median diameter less than about two microns; and

(c) a hydrogenated diblock copolymer of the A-B type, wherein block A is a polymerized vinyl aromatic hydrocarbon and block B is a polymerized conjugated diene.

11. The composition of claim 1 wherein the composition includes a reinforcing amount of an inorganic reinforcing filler.

12. The composition of claim 11 wherein the composition includes from about 10 to about 50% by weight of fibrous glass filaments, based on the total weight of the composition.

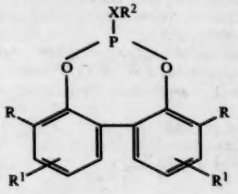
4,196,117

ALKYLATED 1,1'-BIPHENYL-2,2'-DIYL PHOSPHITES AND STABILIZED COMPOSITIONS

John D. Spivack, Spring Valley, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jan. 3, 1978, Ser. No. 866,748
Int. Cl.[2] C07F 9/145; C08K 5/52
U.S. Cl. 260—45.7 PH 23 Claims

1. A 1,1'-biphenylene phosphite of the formula

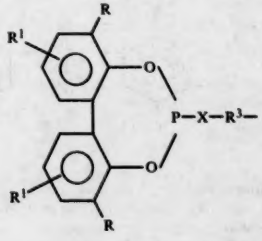


wherein

R is an alkyl group of 1 to 18 carbon atoms,

R^1 is hydrogen or an alkyl group of 1 to 18 carbon atoms and

R^2 is an alkyl group of 1 to 18 carbon atoms, phenyl, phenyl substituted with up to 3 alkyl groups each having 1 to 8 carbon atoms, or a group of the formula



where R^3 is a divalent hydrocarbyl group selected from alkylene, arylene or allylene, and X is oxygen or sulfur.

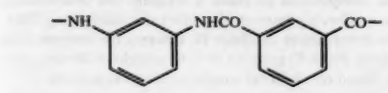
15. A composition of matter comprising an organic material subject to oxidative, thermal and actinic degradation stabilized with a compound of claim 1.

4,196,118
FLAME RESISTANT WHOLLY AROMATIC POLYAMIDE FIBERS

Hiroshi Fujie; Osamu Kai; Eiji Masunaga; Etuo Sumitani, and Akiro Shimomai, all of Iwakuni, Japan, assignors to Teijin Limited, Osaka, Japan

Filed Mar. 30, 1978, Ser. No. 891,779
Claims priority, application Japan, Mar. 30, 1977, 52-34381
Int. Cl.[2] C08K *5/52*
U.S. Cl. 260—45.7 P **11 Claims**

1. A wholly aromatic polyamide fiber having improved flame-resistance characterized by excellent resistance to melting, shrinking and forming holes upon exposure to a high temperature flame or sparks, which comprises (a) a wholly aromatic polyamide having repeating units of which at least about 85 mol % are represented by the formula



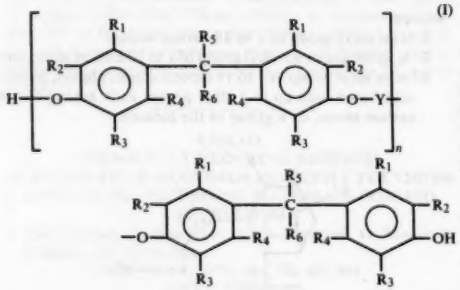
and (b) an organic phosphorus compound having halogen atoms in such an amount as to provide a halogen atom content of about 0.5% to about 25.0% and a phosphorus atom content of about 0.05% to about 6.0% by weight of the wholly aromatic polyamide, wherein said organic phosphorus compound having halogen atoms is a member selected from the group consisting of tris-(2,3-dichloropropyl)phosphate, tris(trichlorophenyl)phosphate and a mixture thereof.

4,196,119
NOVEL PHENOL STABILIZERS

Samuel Evans, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 786,177, Apr. 11, 1977, Pat. No. 4,148,820. This application Jan. 18, 1979, Ser. No. 4,611
Claims priority, application Switzerland, Apr. 14, 1976, 4750/76
Int. Cl.[2] C08K *5/41;* **C07C** *141/16, 145/00*
U.S. Cl. 260—45.95 C **7 Claims**

1. A phenol of the formula I



(I)

wherein

n has a value from 1 to 15, each of

R_1, R_2, R_3 and R_4 independently is a hydrogen atom, a C_1–C_{18}-alkyl group, an aryl group, a C_5–C_{12}-cycloalkyl group or a C_7–C_{13}-aralkyl group,

R_5 is a hydrogen atom or a C_1–C_{18}-alkyl group,

Y is sulphinyl or sulphonyl, and

R_6 is a radical $—CHR_8—CHR_9—S—CR_{10}R_{11}R_{12}$, wherein each of R_8 and R_9 independently is a hydrogen atom or a C_1–C_6-alkyl group, R_{10} is a hydrogen atom, a C_1–C_{19}-alkyl group, a C_2–C_4-alkenyl group or an aryl group, R_{11} is a hydrogen atom or a methyl group and R_{12} is a hydrogen atom or a methyl group, or, R_{11} is a hydrogen atom and R_{12} is a C_2–C_6-alkyl group, or, R_{10} is a hydrogen atom and R_{11} and R_{12} together with the carbon atom to which they are attached represent a cycloalkyl group, or R_{10}, R_{11} and R_{12} together with the carbon atom to which they are attached represent an aryl group, or

R_6 is a hydrogen atom or a C_1–C_{18}-alkyl group or an aryl group.

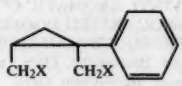
2. A phenol according to claim 1, wherein Y is sulphinyl.

4,196,120
AZABICYCLOHEXANES, METHOD OF USE AND PREPARATION OF THE SAME

William J. Fanshawe, Pearl River; Joseph W. Epstein, Monroe; Lantz S. Crawley, Spring Valley, all of N.Y.; Corris M. Hofmann, Ho-Ho-Kus, and Sidney R. Safir, River Edge, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 809,339, Jun. 23, 1977, Pat. No. 4,131,611, which is a continuation-in-part of Ser. No. 723,402, Sep. 15, 1976, abandoned, which is a continuation-in-part of Ser. No. 601,128, Jul. 31, 1975, abandoned. This application Oct. 6, 1978, Ser. No. 949,326
Int. Cl.[2] C07C *143/68*
U.S. Cl. 260—456 P **5 Claims**

1. An optically active compound of the formula:



wherein the phenyl moiety is mono-substituted from the group consisting of halogen, straight chain C_1–C_6 alkyl, C_1–C_6 alkoxy; trifluoromethyl, nitro, amino, acetamido and hydroxy; and X is selected from the group consisting of electronegative leaving moieties.

4. The compound according to claim 1, cis-1,2-bis(-bromomethyl)-1-(p-tolyl)cyclopropane.

5. The compound according to claim 1, cis-1-(m-methoxyphenyl)-1,2-cyclopropanedimethanol dimethanesulfonate.

4,196,121
BLOCKING PROTEIN FRACTIONS, RECOVERY METHODS AND PRODUCTS

Lawrence Burton, Commack, and Frank Friedman, New York, both of N.Y., assignors to Immunology Research Foundation, Inc., Great Neck, N.Y.

Continuation-in-part of Ser. No. 600,028, Jul. 29, 1975, Pat. No. 4,082,733. This application Feb. 23, 1978, Ser. No. 880,547
Int. Cl.[2] A23J *1/06*
U.S. Cl. 260—112 B **6 Claims**

1. A process for the isolation of Blocker II which comprises:

(a) suspending whole blood in a buffer solution of nearly neutral pH;

(b) centrifuging the whole blood suspension at 5400 to 10,000 g to obtain a first supernatant;

(c) centrifuging the first supernatant at 5400 to 10,000 g to give a second supernatant;

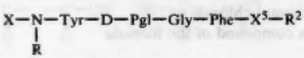
(d) centrifuging the second supernatant at 20,000 to 25,000 g to give a third supernatant;

(e) incubating the third supernatant at a temperature of 55° C.;

(f) centrifuging the third supernatant at 7,000–12,000 g to obtain a fourth supernatant;
(g) centrifuging the fourth supernatant at 20,000–25,000 g to give a Blocker II sediment; and
(h) optionally, purifying the Blocker II sediment by resuspending in an alkaline buffer and centrifuging at 20,000–25,000 g to give a supernatant containing essentially pure Blocker II.

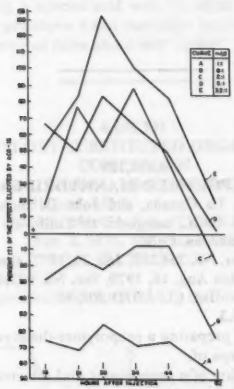
4,196,122
ANALGESIC POLYPEPTIDE
Dimitrios Sarantakis, West Chester, Pa., assignor to American Home Products Corporation, New York, N.Y.
Filed Jul. 1, 1977, Ser. No. 812,039
Int. Cl.[2] C07C *103/52*; A61K *37/00*
U.S. Cl. 260—112.5 R **8 Claims**

1. A polypeptide of the formula:



in which
X is hyrdogen, Arg, Lys or Orn;
X^5 is D-Lys, D-Arg, D-Met or D-Leu;
R is hydrogen, methyl, allyl or cyclopropylmethyl;
and
R^2 is —OH, NH_2 or $—NHC_nH_{2n+1}$, where n is 1,2,3 or 4 providing that when X is hyrogen then X^5 cannot be D-Met or D-Leu; or a pharmaceutically exceptable salt thereof.

4,196,123
HYBRID CHORIONIC GONADOTROPIN PREPARATIONS AND METHODS FOR STIMULATING OVULATION USING SAME
Eugenia Rosemberg, 14 Ashland St., Worcester, Mass. 01609
Filed Nov. 20, 1978, Ser. No. 962,385
Int. Cl.[2] A61K *37/00*; C07C *103/52*; A61K *35/48*
U.S. Cl. 424—177 **37 Claims**



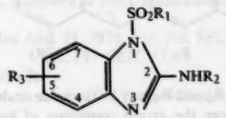
1. A lyophilized hormone preparation comprising a hybridized or recombined product of admixture of α-chorionic gonadotropin subunits and β-chorionic gonadotropin subunits, wherein the ratio of α subunits to β subunits is from about 2:1 to about 8:1, said product being present in an amount sufficient to provide the activity equivalent to at least 1 IU hCG-IS.

4,196,124
1-BENZHYDRYL-2-BENZIMIDOYL-AZETIDINE
Elijah H. Gold, West Orange, and Daniel M. Solomon, Edison, both of N.J., assignors to Schering Corporation, Kenilworth, N.J.
Division of Ser. No. 936,293, Aug. 23, 1978, which is a division of Ser. No. 819,730, Jul. 28, 1977, Pat. No. 4,140,780, which is a division of Ser. No. 664,607, Mar. 8, 1976, Pat. No. 4,052,383, which is a continuation-in-part of Ser. No. 519,396, Oct. 30, 1974, abandoned. This application Nov. 20, 1978, Ser. No. 962,523
Claims priority, application Switzerland, Oct. 24, 1975, 13915/75
Int. Cl.[2] C07D *205/06*
U.S. Cl. 260—239 A **1 Claim**

1. 1-Benzhydryl-2-benzimidoyl-azetidine.

4,196,125
SUBSTITUTED 1-SULFONYLBENZIMIDAZOLES
Charles J. Paget, Indianapolis, and James H. Wikel, Greenwood, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.
Division of Ser. No. 760,803, Jan. 19, 1977, Pat. No. 4,118,573, which is a division of Ser. No. 634,942, Nov. 24, 1975, Pat. No. 4,018,790, which is a continuation-in-part of Ser. No. 574,202, May 8, 1975, abandoned, which is a continuation-in-part of Ser. No. 484,841, Jul. 1, 1974, abandoned. This application Mar. 16, 1978, Ser. No. 887,391
Int. Cl.[2] C07D *417/12*
U.S. Cl. 548—141 **4 Claims**

1. A compound of the formula



wherein
R_1 is thiazol-2-yl, 2-acetamido-4 methylthiazol-5-yl, 1,3,4-thiadiazol-2-yl, 2-methyl-1,3,4-thiadiazol-5-yl, or 2-methylamino-1,3,4-thiadiazol-5-yl;
R_2 is hydrogen, formyl, acetyl or propionyl;
R_3 is C_1–C_8 alkoxycarbonyl, allyloxycarbonyl, properglyloxycarbonyl, (C_3–C_7 cycloalkyl)oxycarbonyl, (C_3–C_7 cycloalkyl)methyloxycarbonyl, 1-(C_3–C_7 cycloalkyl)ethyloxycarbonyl, benzyloxycarbonyl, α-methylbenzyloxycarbonyl, phenoxycarbonyl, hydrazinocarbonyl, carboxy, carboxamido, N-(C_1–C_4 alkyl)carboxamido, N-(C_1–C_4 alkoxy)carboxamido, or cyano; and R_3 is at the 5 or 6 position.

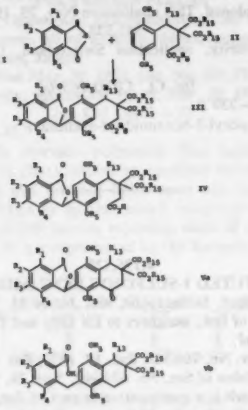
4,196,126
1-(3-METHYL-5-ISOTHIAZOLYL)-3-METHOXY-3-METHYLUREA
Dennis K. Krass, Canal Fulton, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.
Filed Nov. 4, 1977, Ser. No. 848,174
Int. Cl.[2] C07D *275/02*; A01N *9/12*
U.S. Cl. 548—214 **1 Claim**

1. 1-(3-Methyl-5-isothiazolyl)-3-methoxy-3-methylurea.

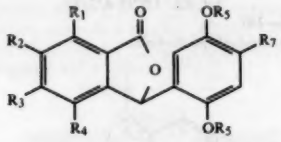
4,196,127
ANTHRACYCLINES

Francis Johnson, Setauket, N.Y., and Kyoung S. Kim, Jeonam, Rep. of Korea, assignors to Research Corporation, New York, N.Y.

Filed Jun. 1, 1978, Ser. No. 911,709
Int. Cl.[2] C07D *307/88*
U.S. Cl. 260—343.3 R 4 Claims



1. A compound of the formula



wherein R_1, R_2, R_3 and R_4 may be the same or different and are each selected from the group consisting of hydrogen, lower alkyl, lower alkoxy, and halo, R_5 is lower alkyl, wherein the prefix lower signifies 1–5 carbon atoms, and R_7 is lower alkyl of one to five carbon atoms or lower alkyl of one to five carbon atoms in the skeleton having the partial structural formula

$$—CH.R_{13}(CR_9R_{10})_n(CR_{11}R_{12})_mCOOR_8$$

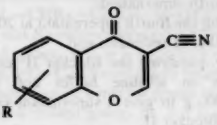
wherein R_8 is methyl or β,β,β-trichloroethyl; R_9, R_{10}, R_{11} and R_{12} are the same or different, and are selected from the group consisting of hydrogen, lower alkyl of one to five carbon atoms, $COOR_{15}$ and COR_{16}, and m and n are 0, 1, or 2 provided m+n is at least 2, R_{13} is lower alkyl of 1–5 carbon atoms or hydrogen, R_{15} is lower alkyl of 2–6 carbon atoms, R_{16} is lower alkyl of 1–6 carbon atoms.

4,196,128
PROCESS FOR THE PREPARATION OF 3-CYANOCHROMONES

Sylvester Klutchko, Ann Arbor, Mich., assignor to Warner-Lambert Company, Morris Plains, N.J.

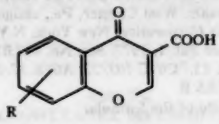
Filed Dec. 13, 1978, Ser. No. 969,117
Int. Cl.[2] C07D *311/22*
U.S. Cl. 260—345.2 4 Claims

1. A process for preparing a compound of the formula

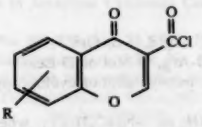


where R is hydrogen, lower alkyl, lower alkoxy; which comprises the steps of

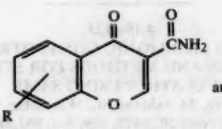
(A) treating a compound of the formula



with thionyl chloride to form a compound of the formula



(B) treating this compound with ammonium hydroxide to form a compound of the formula



and

(C) dehydrating this compound with thionyl chloride in N,N-dimethylformamide to obtain the final compound.

4,196,129
PREPOLYMER DIANHYDRIDES

Robert A. Rhein, La Canada, and John D. Ingham, La Crescenta, both of Calif., assignors to California Institute of Technology, Pasadena, Calif.

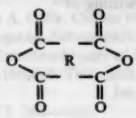
Continuation of Ser. No. 761,252, Jan. 21, 1977, abandoned. This application Aug. 14, 1978, Ser. No. 933,186
Int. Cl.[2] C07D *307/89*
U.S. Cl. 260—346.3 9 Claims

1. A process of preparing a prepolymer-dianhydride adduct comprising the steps of:

forming a solution of a prepolymer diol selected from compounds of the formula:

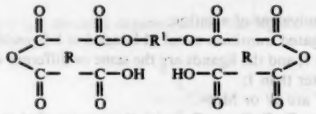
$$R^1—(OH)_n$$

where R^1 is the residue of an organic molecule having a molecular weight from 300 to 8,000 and n is a number from 1.7 to 3.0; and a dianhydride selected from compounds of the formula:



where R is a tetravalent organic group containing 4 to 40 carbon atoms in a highly polar comutual solvent selected from dimethyl acetamide, dimethylformamide, dimethylsulfoxide, sulfolane or N-methylpyrrolidone in which the molar ratio of dianhydride to diol is at least 5:1;

reacting the diol and dianhydride to form an adduct of the formula:



and recovering the adduct from the solution.

4,196,130

MANUFACTURE OF CYCLIC ETHERS

Otto H. Huchler, Limburgerhof; Siegfried Winderl, Heidelberg-Wieblingen; Herbert Mueller, and Herwig Hoffmann, both of Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 786,405, Apr. 11, 1977, abandoned. This application Aug. 7, 1978, Ser. No. 931,851

Int. Cl.² C07D *307/08*

U.S. Cl. 260—346.11 **3 Claims**

1. In a process for the manufacture of tetrahydrofuran by dehydrating 1,4-butanediol in the liquid phase in the presence of aluminum oxide which is suspended in the reaction mixture the improvement which comprises: using aluminum oxide in the process which has been obtained by precipitating aluminum hydroxide from an aqueous alkali metal aluminate solution by mixing a mineral acid with the alkali metal aluminate solution, at a pH above 6 and thereafter heating the hydroxide at a temperature of from about 400° to 800° C.

4,196,131

FURFURYLOXY-SUBSTITUTED ORGANOSILICON COMPOUNDS

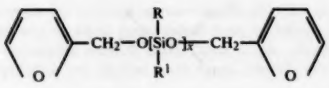
Gary A. Vincent, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 881,452, Feb. 27, 1978. This application Apr. 2, 1979, Ser. No. 25,969

Int. Cl.² H01B *3/20*

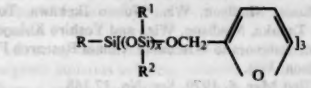
U.S. Cl. 260—347.8 **14 Claims**

1. A composition of matter having the formula



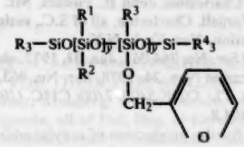
wherein R and R^1 are the same or different and selected from the group consisting of monovalent hydrocarbon radicals having from 1 to 10 carbon atoms, and x has a value from about 2 to about 100.

5. A composition of matter having the formula



wherein R, R^1 and R^2 are the same or different and selected from the group consisting of monovalent hydrocarbon radicals having from 1 to 10 carbon atoms and x has a value of from about 1 to about 35.

10. A composition of matter having the formula



wherein R, R^1, R^2, R^3 and R^4 are the same or different and selected from the group consisting of monovalent hydrocarbon radicals having from 1 to 10 carbon atoms and y and z each have a value of from about 1 to about 50.

4,196,132

CONTINUOUS FLOW PROCESS FOR THE PREPARATION OF O-CHLORANIL FROM TETRACHLOROCATECHOL

Fredric G. Bader, Portage, and Howard J. Burke, Kalamazoo, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Aug. 11, 1978, Ser. No. 932,714

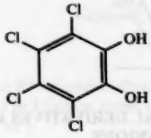
Int. Cl.² C07C *45/16*

U.S. Cl. 260—396 R **5 Claims**

1. An improved process for the production of o-chloranil, which comprises

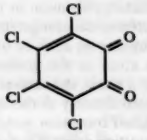
(1) reacting, in a batch process, catechol with an excess of up to 10% of the calculated stoichiometric amount of chlorine at 14° to 40° C. in suspension in an organic, non-chlorinating solvent to provide a slurry of tetrachlorocatechol (II):

II



(2) oxidizing said slurry in a flow reactor arranged for a holding time of 0.4 to 2 minutes with concentrated nitric acid at about 0° to 5° C. to obtain o-chloranil III

III



while decomposing with sulfamic acid amide the produced nitrous acid.

4,196,133

24,24-DIFLUORO-25-HYDROXYCHOLECALCIFEROL

Hector F. DeLuca, Madison, Wis.; Nobuo Ikekawa, Tokyo, Japan; Yoko Tanaka, Madison, Wis., and Yoshiro Kobayashi, Tokyo, Japan, assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Mar. 5, 1979, Ser. No. 17,168
Int. Cl.[2] C07J 9/00
U.S. Cl. 260—397.2 **3 Claims**

1. 24,24-difluoro-25-hydroxy vitamin D_3.

4,196,134

VEGETABLE OIL ADDUCTS

Frank J. Ball, Charleston; John R. Powers, Mt. Pleasant, and William G. Vardell, Charleston, all of S.C., assignors to Westvaco Corporation, New York, N.Y.

Continuation of Ser. No. 764,061, Jan. 31, 1977, abandoned. This application Nov. 24, 1978, Ser. No. 963,181
Int. Cl.[2] C09F 5/00, 7/00; C11C 3/00
U.S. Cl. 260—404.8 **5 Claims**

1. A process for the production of acrylic adduct of vegetable oil which comprises;

(a) conjugating and elaidinizing the nonconjugated portion of fatty acid esters contained in said vegetable oil with a sufficient amount of catalyst to effect conjugation at a temperature between 200° C. and 270° C., wherein said catalyst is a member of the group consisting of iodine, sulfur dioxide and nickel, and

(b) subsequently reacting conjugated double bond sites with acrylic acid at a temperature between 200° C. and 270° C., wherein said acrylic acid is added at a controlled rate.

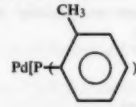
4,196,135

PALLADIUM COMPLEX

Satoru Enomoto, Fujisawa; Hisayuki Wada, Tokyo; Sadao Nishita, Tokyo; Yutaka Mukaida, Tokyo; Mikiro Yanaka, Matsudo, and Hitoshi Takita, Tokyo, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 10, 1978, Ser. No. 904,407
Claims priority, application Japan, May 18, 1977, 52-56311
Int. Cl.[2] C07F 15/00
U.S. Cl. 260—429 R **1 Claim**

1. Bis[tri(ortho-tolyl)phosphine] palladium having the following formula:



4,196,136

LIGATED TRANSITION METAL DERIVATIVES OF HETEROPOLYANIONS

Walter H. Knoth, Jr., Mendenhall, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 6, 1978, Ser. No. 957,691
Int. Cl.[2] C07F 7/22
U.S. Cl. 260—429.7 **7 Claims**

1. Salts and acids containing a triheteropolyanion in which one addenda atom of a heterododecatungstate or heterododecamolybdate is replaced by one tin atom or by two germanium atoms, in which the tin atom or the germanium atoms are bonded to a ligated transition metal, the central atom of the heterododecaanion is not bonded directly to the ligated transition metal-tin moiety or the ligated transition metal-germanium moiety, the added ligated transition metal is not part of the dodecanuclear cage structure, the heteropolyanion contains at least one metal-metal bond which is outside the skeletal structure of the heteropolyanion, and the salts and acids are of a formula selected from the group consisting of

$$Q_aL_bMSnM'_{11}XO_{39} \quad (1)$$

$$Q_aL_{b\text{-}1}M(SnM'_{11}XO_{39})_2 \quad (2)$$

$$Q_a(L_bMGe)_2M'_{11}XO_{40} \quad (3)$$

$$Q_aL_bM(GeOH)_2M'_{11}XO_{39} \quad (4)$$

$$Q_aL_bM(SnM'_{11}XO_{39})(SnM''_{11}X'O_{39}) \quad (5)$$

and

$$\{Q_aL_{b\text{-}1}MGe_2M'_{11}XO_{40}\}_y \quad (6)$$

in which

Q is one equivalent of a cation;

L_bM is a ligated transition metal M bonded to b ligands L, b is at least 1, and the ligands are the same or different when b is greater than 1;

M' and M'' are W or Mo;

X and X' are Si, P, Co or Ge; with the proviso that at least one of M'' and X' is different from M' and X, respectively;

a is the number of formal negative charges on the heteropolyanion; and

y is the degree of polymerization.

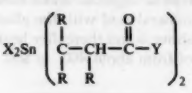
4,196,137

PROCESS FOR THE PRODUCTION OF ORGANO-TIN COMPOUNDS

Hermann O. Wirth, Bensheim; Hermann W. Wehner, Zwingenberg, and Eberhard Otto, Lindenfels, all of Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Apr. 27, 1978, Ser. No. 900,547
Claims priority, application Switzerland, May 6, 1977, 5707/77
Int. Cl.[2] C07F 7/22
U.S. Cl. 260—429.7 **16 Claims**

1. A process for the production of organotin compounds of the formula

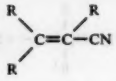


wherein

X represents a chlorine, bromine or iodine atom,

Y represents —OH, $—NH_2$ or —OR' in which R' represents a hydrocarbon group of aliphatic or aromatic character, or said groups substituted by a hydroxyl, thiol, alkoxy, alkylthio, carboxyl or carboalkoxy group, and

R is selected from the group consisting of a hydrogen atom and alkyl, which comprises reacting, at −30° C. to +100° C., metallic tin with hydrogen chloride, hydrogen bromide or hydrogen iodide and an unsaturated nitrile of the formula



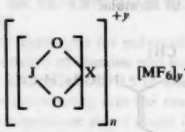
in a reactant medium selected from the group consisting of water, aqueous hydrochloric acid, water and alcohol, carboxylic acid, and alcohol with the proviso that when the reactant medium is alcohol the molar ratio of alcohol to nitrile is at least about 6:1.

4,196,138
DICARBONYL CHELATE SALTS

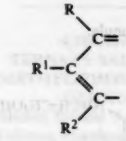
James A. Cella, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 798,783, May 20, 1977, Pat. No. 4,116,886. This application Mar. 22, 1978, Ser. No. 889,035
Int. Cl.[2] C07F 9/68
U.S. Cl. 260—440 9 Claims

1. Dicarbonyl chelates having the formula,



where J is a divalent organo radical having the formula,



R and R^2 are selected from the group consisting of hydrogen, amino, $C_{(1-8)}$ aliphatic hydrocarbon, $C_{(6-13)}$ aromatic, $C_{(1-8)}$ alkoxy, and halogenated derivatives thereof, and R^1 is halogen, R and R^2 and R^1 and R^2 also can be part of the same cycloaliphatic radical, X is a main row element selected from Groups IIIa, IVa, and Va, M is an element selected from B, As and P, n is an integer equal to 2 or 3 and y is equal to 1 or 2.

4,196,139
PROCESS FOR THE PRODUCTION OF ETHYLSILANES

Claus-Dietrich Seiler, Rheinfelden, and Hans-Joachim Vahlensieck, Wehr, both of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Apr. 9, 1979, Ser. No. 28,427
Claims priority, application Fed. Rep. of Germany, Apr. 13, 1978, 2815978
Int. Cl.[2] C07F 7/08
U.S. Cl. 556—479 4 Claims

1. A process for the production of an ethylsilane, which comprises contacting vinyl chloride with hydrogen silane in the presence of a platinum or palladium catalyst at a pressure of not less than 5 bars.

4,196,140
RECOVERY OF WASTE STREAMS CONTAINING RECOVERABLE CHLORINE

Richard W. Lynch, Chattanooga, Tenn., assignor to Olin Corporation, New Haven, Conn.

Filed Sep. 28, 1978, Ser. No. 946,691
Int. Cl.[2] C07C 71/00
U.S. Cl. 260—453 R 34 Claims

1. A process for recovering recoverable chlorine as organic hypohalite and an alkali metal halide from an impure aqueous solution containing alkaline earth metal halide, alkaline earth metal hypohalite and alkaline earth metal chlorate which comprises:

(a) reacting said impure aqueous solution with alkali metal hydroxide to form a slurry of solid particles of alkaline earth metal hydroxide suspended in a liquid, wherein the molar ratio of said alkali metal hydroxide to total moles of alkaline earth metal species is in the range from about 1.5:1 to about 3:1 to complete conversion of all the alkaline earth metal species,

(b) separating said alkaline earth metal hydroxide from said liquid,

(c) admixing said liquid with an organic alcohol to form an organic-aqueous solution, wherein said alcohol is selected from a group consisting of tertiary alcohols, cyclic alcohols, and mixtures thereof,

(d) reacting a halogenating agent with said organic-aqueous solution to form an aqueous phase and an organic phase, said organic phase having an organic hypohalite dissolved therein, and

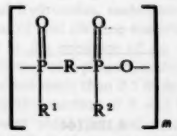
(e) separating said aqueous phase from said organic phase.

4,196,141
BISPHOSPHINIC ACID ANHYDRIDES AND PROCESS FOR THEIR PREPARATION

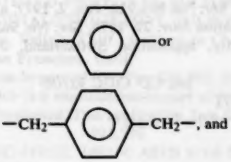
Hans-Jerg Kleiner, Kronberg; Walter Dursch, and Fritz Linke, both of Konigstein, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfort am Main, Fed. Rep. of Germany

Division of Ser. No. 913,043, Jun. 6, 1978, abandoned. This application Feb. 7, 1979, Ser. No. 10,065
Claims priority, application Fed. Rep. of Germany, Jun. 11, 1977, 2726479
Int. Cl.[2] C07F 9/30
U.S. Cl. 260—545 P 4 Claims

1. Bisphosphinic acid anhydrides of the formula



in which R is a saturated, open-chain branched or unbranched alkylene radical having from 1 to 10 carbon atoms,



R^1 and R^2 represent identical or different alkyl groups having from 1 to 4 carbon atoms and m is an integer of greater than or equal to 1.

4,196,142
2-CHLORO-N-ISOPROPYL-3,5-DISUBSTITUTED OR 3,4,5-TRISUBSTITUTES LOWER ALKYL ACETANILIDES AS HERBICIDAL AGENTS

Albert W. Lutz, Princeton, and Robert E. Diehl, Lawrenceville, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 774,357, Mar. 4, 1977, abandoned. This application Feb. 6, 1978, Ser. No. 875,463
Int. Cl.[2] C07C 103/375
U.S. Cl. 260—562 B 2 Claims

1. The compound, 2-chloro-N-isopropyl-3',5'-dimethylacetanilide.

4,196,143

SUBSTITUTED PHENOXYALKYL QUATERNARY AMMONIUM COMPOUNDS

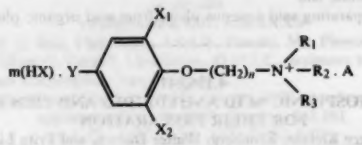
Stanley J. Strycker, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 484,367, Jul. 1, 1974, abandoned. This application Oct. 11, 1977, Ser. No. 840,933

Int. Cl.[2] C07C *93/08;* A01N *9/16*

U.S. Cl. 260—567.6 M 4 Claims

1. A quaternary ammonium compound corresponding to the formula:



wherein Y represents amino, loweralkylamino or diloweralkylamino; R_1 and R_2 represent lower alkyl; R_3 independently represents substituted lower alkyl, substituted lower alkenyl or substituted lower alkynyl substituted with a substituent selected from phenyl, halophenyl, dihalophenyl or trihalophenyl; X_1 and X_2 both represent halogen; A^- represents a stoichiometric equivalent quantity of a pharmaceutically-acceptable anion; n represents one of the integers 2, 3 or 4; HX represents a stoichiometric equivalent quantity of a pharmaceutically-acceptable acid; and m represents one of the integers zero and one.

4,196,144

AROMATIC DIAMINES AND THEIR USE AS POLYCONDENSATION COMPONENTS FOR THE MANUFACTURE OF POLYAMIDE, POLYAMIDE-IMIDE AND POLYIMIDE POLYMERS

Roland Darms, Therwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

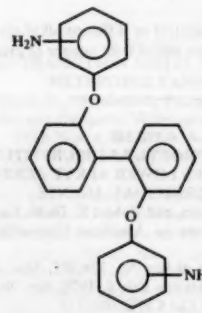
Continuation of Ser. No. 802,922, Jun. 2, 1977, abandoned. This application Nov. 22, 1978, Ser. No. 963,058

Claims priority, application Switzerland, Jun. 15, 1976, 7593/76

Int. Cl.[2] C07C *93/06*

U.S. Cl. 260—571 5 Claims

1. A diamine of the formula



(I),

in which the two amino groups independently of one another are in the o-, m- or p-position of the benzene ring.

4,196,145

DYEING KERATIN FIBERS WITH 2-SUBSTITUTED M-TOLUENEDIAMINES

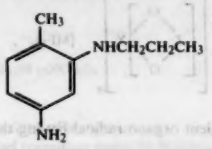
Alexander Halasz, Norwalk, and David Cohen, Stamford, both of Conn., assignors to Clairol Incorporated, New York, N.Y.

Division of Ser. No. 716,052, Aug. 20, 1976, Pat. No. 4,092,102, which is a division of Ser. No. 406,442, Oct. 15, 1973, abandoned. This application Jan. 9, 1978, Ser. No. 867,724

Int. Cl.[2] C07C *143/75, 143/79, 91/06, 87/62*

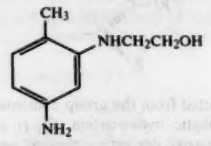
U.S. Cl. 260—573 2 Claims

1. The compound of formula:



or its hydrochloride salts.

2. The compound of formula:



or its hydrochloride salts.

4,196,146

MAKING NITRODIARYLAMINES FROM FORMYL DERIVATIVES OF AROMATIC AMINES AND NITROHALOARENES BY ADMIXING WITH CERTAIN AQUEOUS SALT SOLUTIONS

Helmut L. Merten, Hudson, and Gene R. Wilder, Medina, both of Ohio, assignors to Monsanto Company, St. Louis, Mo.

Filed Mar. 13, 1978, Ser. No. 885,966

Int. Cl.[2] C07C *85/04*

U.S. Cl. 260—576 3 Claims

1. The process which comprises forming nitrodiarylamines by gradually mixing at condensation temperature for forming nitrodiarylamine the formyl derivative of an aromatic amine, nitrohalobenzene and aqueous potassium carbonate and concurrently removing water, wherein the aqueous potassium carbonate is added at a rate slow enough to avoid substantial buildup of water.

4,196,147

MANUFACTURE OF N-ALKYLANILINES

Martin Decker, Ludwigshafen; Herwig Hoffmann, Frankenthal; Leopold Hupfer, Friedelsheim, and Herbert Toussaint, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 29, 1977, Ser. No. 837,938

Claims priority, application Fed. Rep. of Germany, Oct. 14, 1976, 2646379

Int. Cl.[2] C07C *85/06*

U.S. Cl. 260—577 7 Claims

1. A process for the manufacture of an N-alkylaniline by reacting a primary or secondary alcohol with aniline or a nuclear-substituted homolog thereof, in the presence of a catalyst which consists essentially of cobalt, manganese and phosphoric acid, with or without small amounts of an alkali metal oxide or an alkaline earth metal oxide, comprising:

carrying out the reaction with said catalyst supported on a carrier, at a temperature of from 50° to 250° C., and substantially in the absence of hydrogen, and at a pressure of

not less than 100 bars, said pressure being maintained by means of an inert gas compressed to the reaction pressure.

4,196,148

HYDROLYSIS OF POLYURETHANE FOAMS

Lee R. Mahoney, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of Ser. No. 816,636, Jul. 18, 1977, abandoned. This application Mar. 16, 1979, Ser. No. 21,144

Int. Cl.[2] C07C *85/20, 85/26*

U.S. Cl. 260—582 **8 Claims**

1. A method of hydrolysis for polyurethane foam in a reaction zone and recovery of diamine and liquid polymeric product at pressures of from about 0.5 to about 1.5 atmospheres, which comprises introducing into the reaction zone, which is maintained at a temperature above about 185° C., an amount of gaseous ammonia effective to increase the overall rate of diamine recovery wherein the polyurethane is made from reacting polyisocyanate and polyol.

4,196,149

TERNARY SALTS OF TRIS(AMINOMETHYL)PHOSPHINES AND THEIR OXIDES

Arlen W. Frank, Slidell; Donald J. Daigle, New Orleans, and Russell M. H. Kullman, Harahan, all of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Nov. 29, 1978, Ser. No. 964,854

Int. Cl.[2] C07C *83/00*

U.S. Cl. 260—583 E **5 Claims**

1. Ternary salts of tris (aminomethyl)phosphine and its oxide having the formula;

$$(R_2NH^+CH_2)_3P(O)_n3X^-$$

wherein R is a radical selected from the group consisting of hydrogen, alkyl having from 1 to 6 carbon atoms, and aryl, n is an integer from 0 to 1, and X is a halogen.

4,196,150

1-CHLORO-3,3-DIMETHYL-BUTAN-2-ONE

Eckart Kranz, Wuppertal; Rüdiger Schubart, Bergisch-Gladbach; Herbert Schwarz, Leverkusen; Peter Siegle, Cologne, and Heinrich Steude, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 29, 1978, Ser. No. 891,561

Claims priority, application Fed. Rep. of Germany, Apr. 16, 1977, 2716896

Int. Cl.[2] C07C *45/00*

U.S. Cl. 260—593 H **7 Claims**

1. A process for preparing monochloropinacoline which comprises contacting a stoichiometric excess of pinacoline with chlorine at a temperature of −20° to +70° C. employing between 1 and 50 mols excess of pinacoline per mol of chlorine.

4,196,151

PROCESS FOR PRODUCING β,γ-UNSATURATED ALDEHYDE

Shuji Suyama, Aichi, and Mamoru Shimizu, Tokoname, both of Japan, assignors to Nippon Oil and Fats Co., Ltd., Tokyo, Japan

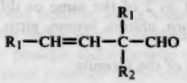
Filed May 10, 1978, Ser. No. 904,473

Claims priority, application Japan, May 14, 1977, 52/55838

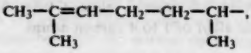
Int. Cl.[2] C07C *47/20*

U.S. Cl. 260—601 R **11 Claims**

1. A process for preparing β, γ- unsaturated aldehyde having the formula



wherein R_1 is selected from the group consisting of alkyl having 1 to 12 carbon atoms, phenyl,



$CH_2{=}CH(CH_2)_7{-}$ and cyclohexyl, and R_2 is selected from the group consisting of allyl, crotyl, methyallyl, 2-methylcrotyl, prenyl, 2,3-dimethylcrotyl, 2-heptenyl, 4,4-dimethyl-2-pentenyl, 2-chloroallyl, 3-chloroallyl, 2-bromoallyl, 2-methyl-3-chloroallyl, 3-chloro-2-pentenyl, cinnamyl, geranyl, propynyl, 2-butynyl, 1-butynyl, 2-pentynyl, 2-hexynyl, 2-heptynyl, 1-phenylpropynyl, 4-chloro-2-butynyl, benzyl, methylphenylmethyl, ethylphenylmethyl, isopropylphenylmethyl, fluorophenylmethyl, chlorophenylmethyl, bromophenylmethyl, iodophenylmethyl, hydroxyphenylmethyl, methoxymethylphenyl, phenoxyphenylmethyl, nitrophenylmethyl, cyanophenylmethyl, acetylphenylmethyl and α-methylnaphthalene, which comprises: admixing and vigorously stirring, at a temperature of from 10° to 150° C., (A) an aldehyde having the formula $R_1{-}CH_2{-}CHO$, with (B) a halide having the formula R_2X, wherein X is halogen, at a molar ratio of A:B in the range of from 2:1 to 10:1, in an aqueous solution of an alkaline material selected from the group consisting of alkali metal and alkaline earth metal hydroxides, carbonates and bicarbonates wherein the amount of said alkaline material is a molar excess relative to B, and in the presence of an organic quaternary ammonium salt effective as a phase transfer catalyst and present in an amount of not more than 0.5 mole per mole of A and effective to catalyse the reaction of A and B whereby to form said β, γ-unsaturated aldehyde, and recovering said β, γ-unsaturated aldehyde from the reaction mixture.

4,196,152

ALGICIDAL AND FUNGICIDAL 1-HALO-2-SUBSTITUTED-THIOETHYL SULFONES, 2-SUBSTITUTED-THIOVINYL SULFONES, AND 1,2-DIHALOTHIOETHYL SULFONES

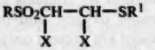
Philip S. Magee, Vallejo, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 814,013, Jul. 7, 1977, abandoned, which is a continuation-in-part of Ser. No. 657,677, Feb. 2, 1976, abandoned. This application Jun. 5, 1978, Ser. No. 912,778

Int. Cl.[2] C07C *149/32, 149/34;* A01N *9/14;* C07C *149/00*

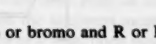
U.S. Cl. 260—609 E **7 Claims**

1. A compound of the formula



wherein X is chloro or bromo, and one R or R^1 is alkyl of 1 to 6 carbon atoms, and the other R or R^1 group is phenyl or phenyl substituted with 1 to 2 of the same or different substituents selected from fluoro, chloro, bromo, nitro or alkyl of 1 to 4 carbon atoms.

4. A compound of the formula



wherein X is chloro or bromo and R or R^1 is alkyl of 1 to 6

carbon atoms, and the other R or R^1 group is phenyl or phenyl substituted with 1 to 2 of the same or different substituents selected from fluoro, chloro, bromo, nitro or alkyl of 1 to 4 carbon atoms.

5. A compound of the formula

$$RSO_2CH{=}CHSR^1$$

wherein one R or R^1 is alkyl of 1 to 5 carbon atoms and the other R or R^1 is phenyl or phenyl substituted with 1 to 2 of the same or different substituents selected from fluoro, chloro, bromo, nitro or alkyl of 1 to 4 carbon atoms.

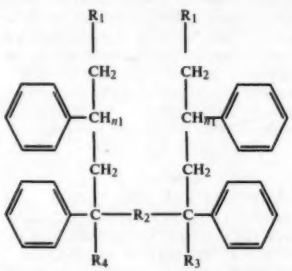
4,196,153

POLYFUNCTIONAL LITHIUM CONTAINING INITIATOR

Lu H. Tung, and Grace Y-S Lo, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 824,883, Aug. 15, 1977. This application Aug. 7, 1978, Ser. No. 931,786
Int. Cl.² C08F 4/48
U.S. Cl. 260—665 R **19 Claims**

1. A polyfunctional lithium containing polymerization initiating composition containing at least two active lithium atoms, the composition having the formula:



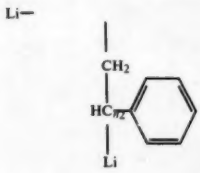
(I)

wherein

R_1 is selected from the group consisting of alkyl, cycloalkyl, and aromatic radicals containing from 1 to 20 carbon atoms;

R_2 is a divalent organic radical having at least 6 carbon atoms, R_2 having at least one aromatic ring and the aromatic ring or rings being directly attached to the carbon atoms which are attached to R_3 and R_4 respectively, with the further limitation R_2 contains carbon and hydrocarbon, and optionally oxygen, and/or sulfur, oxygen and sulfur when present are present only in a configuration of a diphenyl oxide or diphenyl sulfide;

and R_3 and R_4 are individually selected from the group consisting of



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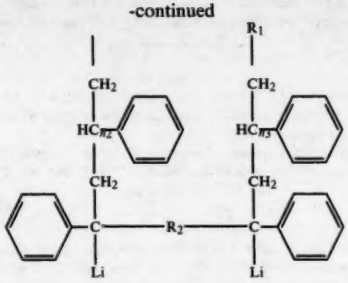


and mixtures thereof, n_1, n_2 and n_3 have average values of 1 or greater.

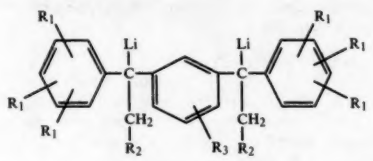
4,196,154

SOLUBLE MULTIFUNCTIONAL LITHIUM CONTAINING INITIATOR

Lu H. Tung; Grace Y-S. Lo, and Douglas E. Beyer, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 840,889, Oct. 11, 1977. This application Aug. 7, 1978, Ser. No. 931,789
Int. Cl.² C08F 4/48
U.S. Cl. 260—665 R **15 Claims**

1. A multifunctional, lithium containing, polymerization initiating compound of the Formula:



wherein R_1 and R_3 are individually selected from the group consisting of hydrogen, alkyl hydrocarbon radicals, and alkoxy radicals, with the further limitation that R_1 and R_3 contain from 0 to 16 carbon atoms, R_2 is a hydrocarbyl radical.

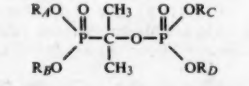
4,196,155

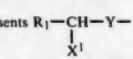
PROCESS FOR PREPARING ORGANIC PHOSPHORUS COMPOUNDS

Isamu Yamamoto, Zushi; Eiichi Noda, and Yoshiaki Noguchi, both of Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Filed Jun. 27, 1978, Ser. No. 919,489
Claims priority, application Japan, Jul. 22, 1977, 52-87453
Int. Cl.² C07F 9/40
U.S. Cl. 260—931 **17 Claims**

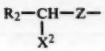
1. A process for preparing an organic phosphorus compound of the following general formula



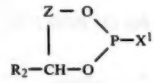
wherein R_A represents 

where X^1 is a halogen atom,

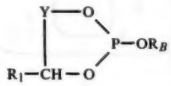
Y is $-CH_2-$ or $-CH_2-CH_2-$, and
R_1 is H or CH_3 when Y is $-CH_2-CH_2-$, or H, CH_3 or C_2H_5 when Y is $-CH_2-$,
R_B represents an alkyl group having from 1 to 4 carbon atoms or a halogenated alkyl group having from 2 to 4 carbon atoms,
R_C represents



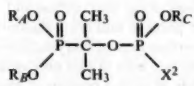
where X^2 is a halogen atom,
Z is $-CH_2-$ or $-CH_2-CH_2-$, and
R_2 is H or CH_3 when Z is $-CH_2-CH_2-$, or H, CH_3 or C_2H_5 when Z is $-CH_2-$, and
R_D represents an alkyl group having from 1 to 4 carbon atoms or a halogenated alkyl group having from 2 to 4 carbon atoms, said process comprising the steps of:
reacting (a) a cyclic halogenophosphite of the general formula



wherein X^1, Z and R_2 have the same meanings as given above, with (b) a cyclic phosphorous acid ester of the general formula



wherein R_1, Y and R_B have the same meanings as given above, and (c) acetone with a mole ratio of halogenophosphite: phosphorous acid ester: acetone of about 1:1:1, the resulting product being reacted with a molecular halogen X_2 to give a first product of the general formula



wherein R_A, R_B, R_C and X_2 have the same meanings as given above; and
reacting said first product with an alkyl or halogenated alkyl alcohol or an alkylene oxide or halogenated alkylene oxide, thereby esterifying said first product to give said organic phosphorus compound.

4,196,156

CARBURETOR WITH LIMITED INTERCONNECTED CHOKE VALVE AND FAST IDLE CAM

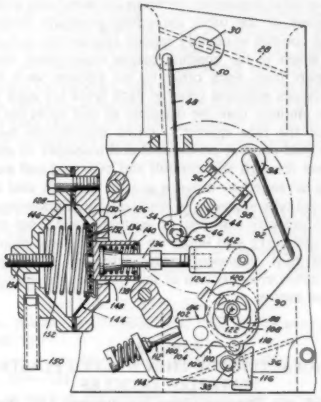
Jerry B. Rogerson, Northville, and Robert S. Harrison, Grosse Ile, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation of Ser. No. 902,307, May 3, 1978, abandoned, which is a continuation of Ser. No. 762,709, Jan. 26, 1977, abandoned. This application Jan. 15, 1979, Ser. No. 3,183

Int. Cl.[2] **F02M** *1/10*

U.S. Cl. 261—39 B **1 Claim**

1. A carburetor having an air/fuel induction passage open at one end to air at essentially atmospheric pressure and connected at its opposite engine end to an engine intake manifold to be subject to the changing vacuum levels therein, the one end having a choke valve unbalance mounted for a rotatable movement by gravity and airflow thereagainst across the one end between a closed position and a wide open inoperative position wherein the choke valve is inoperative to restrict the flow of air into the passage, and a throttle valve secured on a shaft rotatably mounted posterior of the choke valve for movement of the throttle valve across the passage between an engine normal operating temperature level essentially closed engine idle speed position and beyond towards a wide open throttle position to control the volume of flow of an air/fuel mixture through the passage as a function of the position of the throttle valve, the control comprising means operable during engine operations between the normal operating temperature to provide a controlled positioning of the throttle valve relative to the position of the choke valve, to improve emissions while minimizing engine stalling, the last mentioned means including throttle valve abutment means secured to the throttle valve shaft, a second shaft, a fast idle cam rotatably mounted on the second shaft and having an edge formed with a number of steps progressively decreasing circumferentially in radial extent than one which when aligned with the abutment means permits closure of the throttle valve to the normal engine idle speed position, whereby the throttle valve will be progressively opened beyond the latter position as a function of the particular step engaged by the abutment means, spring means



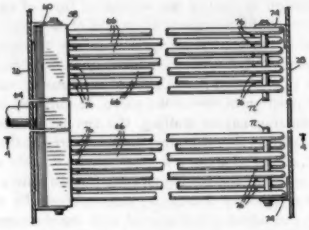
biasing the abutment means and throttle valve towards a closed position and into individual engagement with one of the steps, a thermostatically responsive coiled spring operatively effecting the rotation of the fast idle cam to positions operatively moving the throttle valve to positions progressively more open than the normal idle speed position as a function of decreases in temperature from a predetermined level, a first lever fixed to the choke valve for rotation therewith, a second lever fixed for rotation with the thermostatic spring, a link pivotally interconnecting the first and second levers, the means interconnecting the levers and link including a lost motion pin and slot connection permitting relative rotational movement between the link and one of the levers, a third lever rotatably mounted with respect to the thermostatic spring and having a one-way engagement with the second lever permitting independent movement of the second lever in a choke valve opening direction while forcing concurrent movement of the second lever with the third lever upon movement of the third lever in the other direction, and linkage means pivotally connecting the third lever and fast idle cam permitting the fast idle cam to be rotated from a first position engaged with a step on the cam while the choke valve is in wide open position to a second position out of engagement with the abutment means while the choke valve is still maintained in a wide open position.

4,196,157

EVAPORATIVE COUNTERFLOW HEAT EXCHANGE

Edward N. Schinner, Silver Spring, Md., assignor to Baltimore Aircoil Company, Inc., Jessup, Md.

Filed Jul. 6, 1978, Ser. No. 922,454
Int. Cl.[2] B01F 3/04
U.S. Cl. 261—155 9 Claims



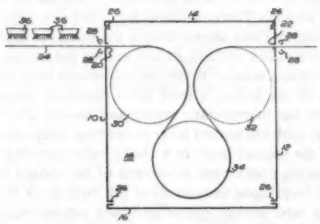
1. An evaporative counterflow heat exchanger comprising a conduit of generally uniform cross section extending in a vertical direction, a coil assembly positioned inside said conduit, said coil assembly comprising inlet and outlet manifolds and a plurality of tubes connected between the manifolds with different segments of the tubes extending generally horizontally across the conduit in equally spaced relation to each other at different levels in the conduit, means maintaining said tubes spaced apart from each other by an amount such that the spaces between adjacent tubes at each level are each greater, by a finite amount, than the diameter of said tubes but are less than twice the tube diameter, liquid distribution means arranged in said conduit above said coil assembly to distribute liquid down through said conduit and over said coil assembly, fan means arranged to move a gas up through said conduit between said tube segments in counterflow relationship to said liquid at a velocity sufficient to entrain liquid from said coil assembly and carry said liquid up past said liquid distribution means, and mist eliminator means extending across substantially the entire cross section of said conduit above said liquid distribution means.

4,196,158

MANUFACTURE OF THIN WALLED PLASTICS MATERIAL ARTICLES

Peter Ward, c/o Plastona (John Waddington) Ltd. Wakefield Rd., Leeds LS10 3TP Yorkshire, England

Continuation-in-part of Ser. No. 619,540, Oct. 3, 1975, abandoned. This application Dec. 27, 1977, Ser. No. 864,358
Claims priority, application United Kingdom, Oct. 3, 1974, 42888/74
Int. Cl.[2] B29C 17/04
U.S. Cl. 264—25 4 Claims



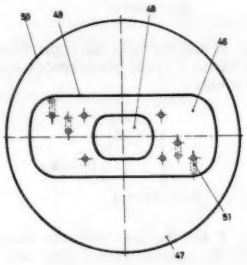
1. A method for the manufacture of thin walled articles from plastics material having a small temperature range over which the plastics material can be formed by thermoforming, wherein a continuous web of the plastics material is heated by radiation heating means approximately to optimum thermoforming temperature, and then temperature variations which arise because of thickness and heating variations in the web are compensated for by passing the web in contact with and round roller means heated to said optimum temperature to provide even temperature distribution in the web, and the thus heated web whilst still hot is fed step by step with dwell times between steps to a thermoforming machine whereat articles are thermoformed therein during said dwell times.

4,196,159

PROCESS FOR INCREASING THE LIFE OF THE REFRACTORY MASONRY OF METALLURGICAL VESSELS

Karl Brotzmann, Sulzbach-Rosenberg, and Paul G. Mantey, Amberg, both of Fed. Rep. of Germany, assignors to Eisenwerk-Gesellschaft Maximilianshutte mbH., Sulzbach-Rosenberg, Fed. Rep. of Germany

Continuation of Ser. No. 448,608, Mar. 6, 1974, abandoned. This application Feb. 15, 1978, Ser. No. 877,920
Claims priority, application Fed. Rep. of Germany, Mar. 7, 1973, 2311306
Int. Cl.[2] F27D 1/16
U.S. Cl. 264—29.1 15 Claims



1. A process for increasing the life of porous refractory oxide brick masonries subject to wear in furnaces and metallurgical vessels which comprises infiltrating a gaseous hydrocarbon capable to dissociating into carbon and other decomposition products, into pores in said brick masonries from an outer, relatively cooler surface area of said masonries toward an inner relatively hotter surface area of said masonries, said infiltration being effected while at least a portion of said brick masonries are at a temperature sufficient for said hydrocarbon gas to dissociate and to deposit carbon in said pores in brick masonries, thereby depositing carbon from said gas in said pores in situ, said hydrocarbon gas being supplied to said outer relatively cooler surface area at a rate not exceeding 10 standard cubic meters/hour/square meter of said relatively cooler surface area, said hydrocarbon gas being infiltrated into said brick masonries with a pressure gradient in a direction opposite that of the temperature gradient, which process includes providing at least one barrier layer which is hermetic with respect to gases in said masonry in order to confine the infiltration of gas to specific areas of the masonry.

4,196,160

METHOD AND APPARATUS FOR FORMING FOAM CUSHIONS

Charles R. Sperry, Wilton, Conn., assignor to Sealed Air Corporation, Saddle Brook, N.J.

Filed Aug. 25, 1978, Ser. No. 936,743
Int. Cl.[2] B29D 27/04
U.S. Cl. 264—40.4 13 Claims

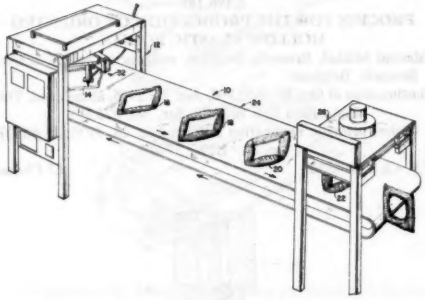
1. A method of forming a product from foam material, comprising the steps of:

dispensing separate masses of foam material onto a transfer surface at a depositing station, said dispensing being controlled so that said separate masses form a predetermined pattern of said foam material without the use of a mold,

transferring said separate masses of foam material to a forming station,

during said transferring operation, allowing said separate masses of foam material to rise to a tack-free state and to reach substantially full expansion, said transferring operation continuing for a predetermined period of time which is less than the time which it takes for said foam material to set,

then, before said foam material sets, individually shaping each of said masses of said foam material at said forming station into a predetermined configuration by employing force-applying elements to press each of the masses of said foam material into said predetermined configuration while on said transfer surface and until said mass of foam material sets, and



releasing said force-applying elements from said shaped mass of foam material.

7. Apparatus for forming a product from foam material, comprising:

means for dispensing said foam material onto a transfer surface at a depositing station as separate masses of foam material,

means for controlling said dispensing means to move in a predetermined pattern to dispense said foam material in said predetermined pattern,

means for moving said transfer surface and said masses of foam material from said depositing station to a forming station, while said masses of foam material rise to a tack-free state,

said forming station including force-applying means for individually forming each of said masses of foam material into a predetermined configuration while on said transfer surface.

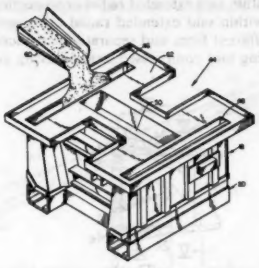
4,196,161

METHOD FOR PRECASTING CONCRETE PRODUCTS

Roger L. Toffolon, Hartford, and Warren E. Kart, Bristol, both of Conn., assignors to Atlantic Pipe Construction, Plainville, Conn.

Filed Mar. 1, 1978, Ser. No. 882,929
Int. Cl.[2] B28B *1/08, 3/08, 7/10*
U.S. Cl. 264—71 **30 Claims**

1. A method for pre-casting concrete products comprising the steps of providing a form having at least two mating sections one of which is a base section and other of which is a downwardly open upper section with a fill opening and which sections are relatively movable between a disassembled condition and an assembled condition where they cooperatively form a casting cavity, each base form sections having at least two separable parts with assembled and disassembled conditions respectively for supporting a cast product substantially throughout the area of its lower surface and throughout only a portion of the area of its lower surface, arranging the two form sections in their assembled condition and with the parts of the base section assembled, preparing dry mix concrete having a moisture content in the range of 1% to 4%, depositing the dry mix in the casting cavity formed by the form sections through the fill opening in said upper section, vibrating the assembled form sections to eliminate voids and to compact the dry mix therewithin so as to form a green cast concrete product having



sufficient initial structural integrity for self support, stripping the upper form section prior to the passage of any substantial curing time to expose the green cast product and to allow the same to stand free on the base section of the form, transporting the green cast product atop the assembled base section of the form, curing the product, and further transferring the product by lifting the same and disassembling the parts of the underlying form base section whereby to support the cured product thereafter throughout only a portion of its lower surface.

4,196,162

METHOD FOR MAKING GASKET INCLUDING SPHERICAL STOP MEANS AND VULCANIZED IN-SITU

Günter Stichter, Rossdorf, Fed. Rep. of Germany, assignor to SIPAVEL-Sociedade de Isolamentos Para Veiculos, Lda., Lisbon, Portugal

Filed Feb. 21, 1979, Ser. No. 13,677
Claims priority, application Fed. Rep. of Germany, Feb. 23, 1978, 2807759
Int. Cl.[2] B29D *3/00*; B29H *3/00*
U.S. Cl. 264—131 **9 Claims**

1. In a method for sealing between two surfaces which operate at elevated temperatures wherein a vulcanizable elastomer composition is vulcanized in-situ by heat from said surfaces as a result of said elevated temperatures and under pressure developed by adjustment of spacing between said surfaces the improvement comprising:

forming a sheet of unvulcanized elastomer composition, depositing a layer of spherical bodies of a suitable size and material on said sheet to limit compression of said elastomer composition between said surfaces, embedding said bodies at least partially in said sheet, inserting said sheet between said surfaces and curing said elastomer in-situ.

4,196,163

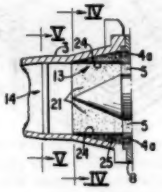
PRODUCTION OF STRIPPED SOAP STRANDS AND APPARATUS FOR ITS PRODUCTION

Friedhelm Finkensiep, Krefeld-Uerdingen, and Reinhold W. Meye, Krefeld, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA), Dusseldorf-Holthausen, Fed. Rep. of Germany

Filed May 12, 1978, Ser. No. 905,536
Claims priority, application Fed. Rep. of Germany, May 14, 1977, 2722020
Int. Cl.[2] B29F *3/12*
U.S. Cl. 264—148 **9 Claims**

1. A process for the production of multicolor striped pieces

of soap where the edges of the stripes blend into each other comprising the steps of continuously extruding two strands of colored soap, each strand having a different color, said extrusion being at a substantially equal rate for each strand, passing said two strands of colored soap through separate die orifices within an extended radial cross-section whereby said two strands of colored soap are combined in a predetermined cross-section having at least two parallel stripes from each of said two strands, the edges of said parallel stripes being sharply delineated and compressed, passing said combined compressed strand, still within said extended radial cross-section through a static mixer within said extended radial cross-section having die orifices different from said separate die orifices, and compressing, cutting said compressed strand having edges of said



parallel stripes which are not sharply delineated and recovering multicolor striped pieces of soap where the edges of the stripes blend into each other without having a marbled structure.

3. An extrusion path for an extruder designed to extrude two soap strands of different color at substantially the same rate consisting in a restricted nozzle provided with two channels supplied by said two soap strands, said restricted nozzle having a predetermined outlet cross-section resulting in at least two parallel stripes from each of said two strands, the edges of said parallel stripes being sharply delineated and coextensive, a static mixer having die orifices different from said restricted nozzle designed to blur sharply delineated color zones without marbleizing the same, downstream from said restricted nozzle, and a compression zone downstream from said static mixer.

4,196,164

MANUFACTURE OF PLASTICS MATERIAL ARTICLES

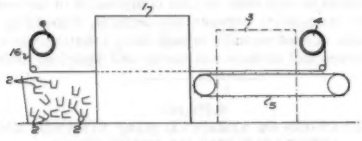
Peter Ward, Leeds, England, assignor to Plastona (John Waddington) Ltd., Leeds, England

Continuation-in-part of Ser. No. 793,692, May 4, 1977, abandoned, which is a division of Ser. No. 619,541, Oct. 3, 1975, abandoned. This application Jan. 30, 1979, Ser. No. 7,839

Claims priority, application United Kingdom, Oct. 4, 1974, 43080/74

Int. Cl.[2] **B29C** *17/03;* **B29D** *7/24;* **B29F** *5/00*

U.S. Cl. 264—322 **3 Claims**



1. In a method of manufacturing thin walled plastic material articles from polyolefin plastics web which is substantially free of orientation so that it will expand lengthwise and widthwise when heated to thermoforming temperature comprising holding the web along its edges on spaced holding means carried by chains which move in endless paths, carrying said web along portions of said endless paths, heating the web to thermoforming temperature whilst it moves along said portions of the endless paths, and thermoforming the heated sheet material to form articles therein, the improvement that the said holding means of each chain are moved further apart lengthwise of said portions of each endless path as they move along said portions of said endless paths to compensate for lengthwise expansion of the web and the holding means of the respective chains are moved apart as they move along said portions of the endless path to compensate for width-wise expansion of the web so that web is supported without sagging and without being stretched by the moving holding means.

4,196,165

PROCESS FOR THE PRODUCTION OF ORIENTED HOLLOW PLASTIC BODIES

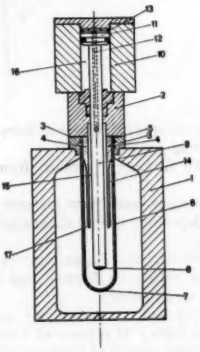
Edmond Michel, Brussels, Belgium, assignor to Solvay & Cie., Brussels, Belgium

Continuation of Ser. No. 650,760, Jan. 20, 1976, abandoned. This application Feb. 6, 1978, Ser. No. 875,501

Claims priority, application France, Feb. 26, 1975, 75 06507

Int. Cl.[2] **B29C** *17/07*

U.S. Cl. 264—530 **13 Claims**



1. Process for the production of oriented hollow plastic bodies having a very uniform wall thickness which comprises successive stages,

(1) forming elongated preforms, each having a uniform wall thickness in the part thereof subjected to expansion, a closed end and an open end having a molded neck,

(2) heat conditioning the preforms at a uniform temperature which allows the plastic to be oriented by stretching,

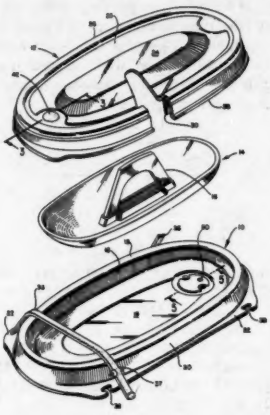
(3) introducing the preforms into blow moulds, the cavities of which have a greater length than the length of the preforms, and which reproduce the shape of the desired hollow bodies, and

(4) blowing the preforms by introducing an expansion fluid into the preforms through a feed channel which is substantially parallel to the longitudinal axis of the preforms, the improvement wherein the expansion fluid is injected axially into the preforms towards their bottom so that the expansion fluid strikes the bottom of the preform in an axial direction, the expansion fluid being injected into the preforms at a distance from their bottom which is between 20 and 60% of their length which is subjected to expansion.

4,196,166
STERILIZED STORAGE CONTAINER

Roger S. Sanderson, 24662 Santa Clara, Dana Point, Calif. 92629, and Robert C. Whelchel, Newport Beach, Calif., assignors to Roger S. Sanderson, Dana Point, Calif.

Continuation-in-part of Ser. No. 640,824, Dec. 15, 1975, abandoned. This application Jul. 6, 1976, Ser. No. 703,044
The portion of the term of this patent subsequent to Apr. 17, 1996, has been disclaimed.
Int. Cl.[2] A61L *3/00, 5/00, 7/00*
U.S. Cl. 422—33 24 Claims



1. Apparatus for holding items being sterilized and for storing such items after sterilization, comprising:

means forming a closed container including a base, a lid and a flexible gasket having means for sealing the lid to the base in a manner which permits gaseous leakage past the gasket means out of the container when a vacuum is applied to the container exterior but prevents air flow into the container when said vacuum is removed; and

valve means including an opening in one of the container walls, a valve member for controlling fluid flow through the opening, means urging the valve member closed, and means for holding the valve member in an open position so that sterilizing gases applied to the container exterior can enter the container, said holding means including temperature responsive means which is in one condition at normal room temperatures and is arranged to hold the valve member open but changes to a second condition at sterilizing temperatures after the container and its contents are sterilized, to permit the valve member to close.

4,196,167
DRUG DETECTION DEVICE

C. Eric Olsen, Ventura, Calif., assignor to California Medical Developments, Inc., Ventura, Calif.

Filed Dec. 26, 1978, Ser. No. 972,681
Int. Cl.[2] G01N *33/16, 21/06*
U.S. Cl. 422—61 4 Claims

1. A drug detection device comprising:

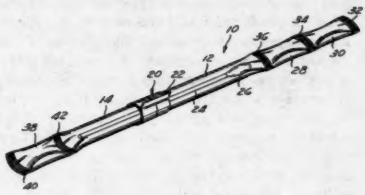
a housing having an internal elongated chamber constructed of a first member and a second member, said first member being attachable to said second member by a sealing means forming said internal chamber, said sealing means being removable permitting separation of said first and second members;

a swab located within said internal chamber with said first member being attached to said second member;

a first compartment attached to said first member at its closed end, a first frangible seal connecting said internal chamber and said first compartment, said first compartment being adapted to contain a quantity of a first substance;

a second compartment attached to said first compartment, a second frangible seal connecting said first compartment and said second compartment, said second compartment being adapted to contain a quantity of a second substance;

a third compartment attached to said second member at its closed end, a third frangible seal connecting said internal chamber and said third compartment, said third compartment being adapted to contain a quantity of a third substance; and

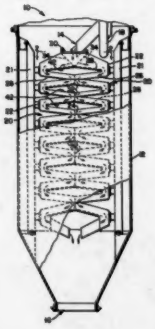


whereby said sealing means can be broken permitting removal of said swab and after use of such is to be replaced within said internal chamber of said first member, said second frangible seal is to be broken causing mixing of said first and second substance, said first frangible seal is then to be broken causing contact of the intermixed substance of the intermixed first and second substances with the tip of said swab, said swab is to be removed from said first member and located within said second member, said third frangible seal is then to be broken causing contact of the tip of said swab by said third substance, upon a certain drug being present on the tip of said swab the tip will change color.

4,196,168
SLOPED TRAY ARRANGEMENT FOR POLYMERIZATION REACTOR

Alan E. Lewis, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 5, 1978, Ser. No. 903,368
Int. Cl.[2] B01J *1/00*
U.S. Cl. 422—134 3 Claims



1. An improved polymerization reactor having a vertically disposed outer shell, a liquid polymer inlet at the top of the shell and a liquid polymer outlet at the bottom of the shell, and a series of downwardly sloping trays for conducting a flow of the liquid polymer in a descending path from the liquid polymer inlet to the liquid polymer outlet;

the improvement comprising:

a series of essentially rectangular pan assemblies supportedly spaced inwardly from said outer shell in vertical disposition one above the other for encompassing said downwardly sloping trays and for dividing the liquid polymer flow from said liquid polymer inlet to said liquid polymer outlet into two separate flows of uniform flow cross-section;

each pan assembly having four end walls and being open at the top for escape of vapor from the liquid polymer flow to the outer shell and defining in its bottom wall a bottom opening for through flow of the liquid polymer, the bottom wall defining a pair of oppositely sloped lower trays which are included in said downwardly sloping trays, said lower trays extending radially inwardly and downwardly toward the bottom opening; the pan assembly having spaced above the lower trays a pair of oppositely sloped upper trays which are also included in said downwardly sloping trays; said upper trays extending radially outwardly and downwardly for conducting the liquid polymer to the lower trays and having outer ends spaced inwardly from two opposite end walls of the pan assembly and being connected at the sides to the two other opposite end walls; and baffle means extending above and midway of the ends of the upper trays across the surface thereof to separate the liquid polymer flow in one of the upper trays from the other; and the pan assembly further defining openings in its said two other opposite end walls between the upper and lower trays adjacent the sides of the trays for escape of the vapor from the liquid polymer flow in the lower trays to the outer shell; and

means disposed above one of said baffle means and disposed below the liquid polymer inlet and within the first pan assembly of the series of pan assemblies for distributing the flow of the liquid polymer equally on either side of said one of said baffle means to each of the upper trays for said first pan assembly.

4,196,169

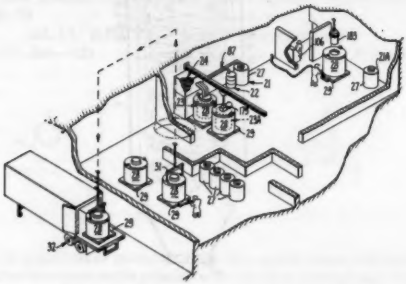
SYSTEM FOR DISPOSING OF RADIOACTIVE WASTE

Kenneth A. Gablin, Burton, and Larry J. Hansen, Tacoma, both of Wash., assignors to Nuclear Engineering Company, Inc., Louisville, Ky.

Continuation of Ser. No. 483,785, Jun. 27, 1974, Pat. No. 4,056,362, which is a division of Ser. No. 220,214, Jan. 24, 1972, abandoned. This application Sep. 20, 1976, Ser. No. 724,281

Int. Cl.[2] B01J *1/00;* **G21F** *9/00*

U.S. Cl. 422—159 **39 Claims**



1. A system for disposal of radioactive waste material, comprising

a supply tank adapted to contain a setting agent in liquid form,

a catalyst tank adapted to contain a curing agent in liquid form,

a holding tank for storing liquids containing radioactive waste materials,

a receiving tank adapted to contain solidified radioactive waste material,

pump means adapted for connection to said tanks and to a source of liquid containing radioactive waste material,

said pump means being formed to pump proportioned amounts of said setting agent and curing agent and radioactive liquid waste into said receiving tank,

mixing means associated with said pumping means and formed for intermixing said setting agent and said radioactive liquid waste before delivery to said receiving tank

and a lead cask transportation shield formed to enclose said receiving tank and prevent unwanted radioactive emissions during filling and transfer, said lead cask being formed for removal and ultimate disposal of the filled receiving tank at a burial site.

4,196,170

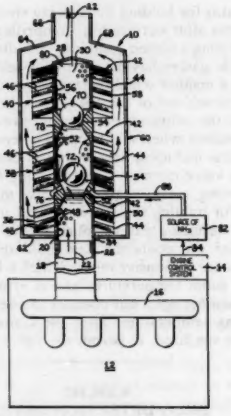
MULTISTAGE CATALYTIC REACTOR HAVING A PRESSURE RESPONSIVE GAS FLOW CONTROL VALVE THEREIN

Richard A. Cemenska, Edelstein, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed May 26, 1978, Ser. No. 909,752

Int. Cl.[2] B01J *8/02, 8/04;* **F01N** *3/15*

U.S. Cl. 422—171 **9 Claims**



1. In a multistage catalytic reactor (10) for purifying exhaust gas having first and second catalyst bed assemblies (36,38) and an inlet passage (30) for communicating exhaust gas to the catalyst bed assemblies (36,38), the improvement comprising:

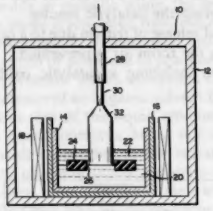
valve means (70/88) for automatically maintaining gas flow solely through the first catalyst bed assembly (36) in response to a pressure differential substantially across the first catalyst bed assembly (36) by remaining in a closed position, said pressure differential being below a preselected value, and for moving to an open position and establishing gas flow through the first and second catalyst bed assemblies (36,38) in response to a pressure differential of at least said preselected value, said valve means (70/88) being located in said inlet passage (30) between the first and second catalyst bed assemblies (36,38).

4,196,171

APPARATUS FOR MAKING A SINGLE CRYSTAL OF III-V COMPOUND SEMICONDUCTIVE MATERIAL

Masayuki Watanabe; Katsutoshi Komeya, both of Yokohama, and Masahiro Nakajima, Yokosuka, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Aug. 3, 1978, Ser. No. 930,696
Claims priority, application Japan, Sep. 5, 1977, 52-105771
Int. Cl.[2] B01J *17/00, 17/20*
U.S. Cl. 422—246 6 Claims



1. An apparatus for making a single crystal of III-V compound semiconductive material which comprises:

a sealed vessel;

a crucible received in the sealed vessel to hold a first molten liquid consisting essentially of a III-V compound semiconductive material from which a single crystal is to be grown and a second molten liquid of an encapsulating material overlying said first molten liquid; and

a floating member which has a smaller density than said first molten liquid and a larger density than said second molten liquid and is set in an interface between said first and second molten liquids, said floating member being made from a mixed material consisting essentially of 0.5 to 10% by weight of at least one metal oxide member selected from the group consisting of oxides of yttrium and the lanthanum series elements, 0.5 to 10% by weight of aluminium oxide and the balance of silicon nitride, and having an opening for defining the cross sectional outline of the single crystal during its growth.

4,196,172

HEMIHYDRATE TYPE PHOSPHORIC ACID PROCESS

Fernando N. Ore, Whittier; John D. Ellis, Huntington Beach, and James H. Moore, La Verne, all of Calif., assignors to Occidental Petroleum Corporation, Los Angeles, Calif.

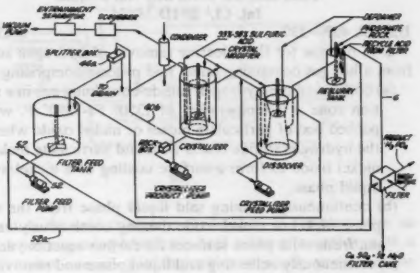
Continuation-in-part of Ser. No. 703,208, Jul. 7, 1976, Pat. No. 4,132,760, and a continuation-in-part of Ser. No. 703,138, Jul. 7, 1976, abandoned. This application Dec. 29, 1977, Ser. No. 865,557
The portion of the term of this patent subsequent to Jan. 2, 1996, has been disclaimed.
Int. Cl.[2] C01F *11/46;* C01B *25/22*
U.S. Cl. 423—167 16 Claims

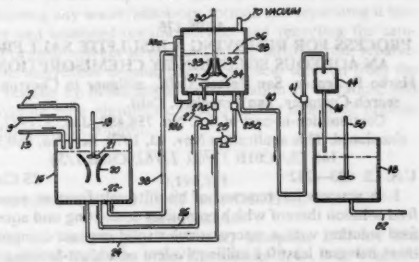
1. A process for the preparation of phosphoric acid from phosphate rock and sulfuric acid comprising the steps of:

(a) adding phosphate rock and phosphoric acid to a first reaction vessel which contains a first slurry comprising calcium sulfate hemihydrate, monocalcium phosphate, and phosphoric acid, whereby the added phosphate rock is substantially converted to monocalcium phosphate, calcium sulfate hemihydrate, and phosphoric acid while maintaining the first slurry at a soluble or excess sulfate concentration at less than about 0.0%, that is, not an excess of soluble sulfate over stoichiometric for the formation of calcium sulfate, and at a temperature and P_2O_5 concentration such that the calcium sulfate by product comprises the hemihydrate;

(b) adding sulfuric acid, in amounts such that the sulfate content of the sulfuric acid plus the sulfate content of the added phosphate rock is equivalent to about 90% to about 100% of the stoichiometric amount of sulfate required to react with the calcium present in the phosphate rock added in part (a) to form calcium sulfate hemihydrate, to a second reaction vessel which contains a second slurry comprising calcium sulfate hemihydrate, monocalcium phosphate, sulfuric acid and phosphoric acid, whereby the sulfuric acid reacts with the monocalcium phosphate and the phosphate rock to form calcium sulfate hemihydrate and phosphoric acid, said second slurry being maintained at a soluble sulfate concentration of about 0.7% to +4.5%;

(c) circulating a first portion of the first slurry from the first reaction vessel through a first conduit into the second





reaction vessel and circulating a first portion of the second slurry from the second reaction vessel through a second conduit into the first reaction vessel, the circulation being continuous;

(d) circulating a second portion of the first slurry within the first reaction vessel and circulating a second portion of the second slurry within the second reaction vessel, at a rate at least equal to 50% of the volume of the slurry in the vessel per minute to better mix the slurries in both the first and second reaction vessels, and

(e) separating a third portion of the second slurry into a liquid comprising phosphoric acid and a solid comprising calcium sulfate hemihydrate.

4,196,173

PROCESS FOR REMOVING MERCURY FROM A GAS

Geert J. deJong, Boekelo, and Hendrik J. Vos, Hengelo, both of Netherlands, assignors to Akzo NVV., Arnhem, Netherlands

Filed Sep. 29, 1978, Ser. No. 946,861
Claims priority, application Netherlands, Sep. 29, 1977, 7710632
Int. Cl.[2] B01D *53/34*
U.S. Cl. 423—210 7 Claims

1. In a process for removing mercury gases containing mercury vapor which comprises contacting these gases with activated carbon on which a halogen is adsorbed, the improvement which comprises flowing a gas to be freed from mercury

vapor continuously through a bed of activated carbon having a maximum thickness of 5 cm and having chlorine adsorbed thereon, and maintaining the chlorine content of the activated carbon in the range of from 5 to 12% by weight based on the weight of the carbon during the passage of the gas through the activated carbon bed by continuously or periodically supplying the bed with a replenishing amount of chlorine.

4,196,174

NICKEL SULFIDE PROCESS FOR THE REMOVAL OF H_2S

Peter Steiner, and Carl Gutterman, both of Edison, N.J., assignors to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Jan. 31, 1978, Ser. No. 873,823

Int. Cl.[2] B01D *53/34*

U.S. Cl. 423—230 **3 Claims**

1. A process for the selective removal of hydrogen sulfide from a hot gas containing same, said process comprising:

(a) contacting the hydrogen sulfide-containing gas in a reaction zone at a temperature of 1350° F.–1390° F. with a packed bed of particulate nickel or nickel oxide whereby the hydrogen sulfide reacts with said particulate nickel or nickel oxide to form a surface coating of a nickel/sulfur liquid phase;

(b) continuously draining said liquid phase from the solid phase nickel or nickel oxide thereby continuously exposing fresh solid phase surfaces for further reaction; and

(c) continuously collecting said liquid phase and removing it from said reaction zone.

4,196,175

PROCESS FOR REMOVING A BISULFITE SALT FROM AN AQUEOUS SOLUTION BY CHEMISORPTION

Harbo P. Jensen, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 756,453, Jan. 3, 1977, abandoned. This application Nov. 13, 1978, Ser. No. 960,343

Int. Cl.[2] C01B *17/00, 17/62;* C02B *1/56*

U.S. Cl. 423—242 **25 Claims**

1. A process for removal of bisulfite salt from an aqueous feed solution thereof which comprises contacting said aqueous feed solution with a macroreticular solid organic compound, there being at least 0.1 milliequivalent of adduct-forming carbonyl functional group per gram of compound to form an adduct of said bisulfite salt with said compound, and withdrawing the resulting residual aqueous solution from contact with said bisulfite-adducted compound.

16. A process for removing sulfur dioxide from a sulfur dioxide-contaminated gas which comprises forming an aqueous solution of a bisulfite salt by reacting said sulfur dioxide with a reactant and contacting said salt with adduct-forming carbonyl functional groups in a macroreticular solid organic compound containing at least 0.1 milliequivalent of functional group per gram of compound to form an adduct of said bisulfite salt with said compound, said withdrawing the resulting residual aqueous solution from contact with said bisulfite-adducted compound.

4,196,176

METHOD AND APPARATUS FOR CONTROLLING ACCIDENTAL RELEASES OF TRITIUM

Terry R. Galloway, Berkeley, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 3, 1978, Ser. No. 930,629

Int. Cl.[2] C01B *50/02;* B01J *8/02;* G21C *9/00;* B01J *37/18*

U.S. Cl. 423—248 **6 Claims**

1. In a method for treating room air, which has been associated with a nuclear reactor and as a result normally contains generated tritium at low concentrations, to remove the tritium and including the step of introducing such air to a catalytic oxidation reactor to convert the tritium to tritiated water vapor, the improvement comprising:

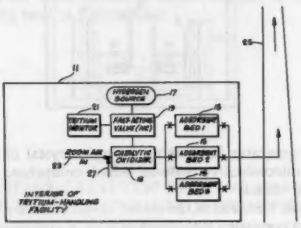
a. said catalytic reactor having therein under normal operation a substantial amount of inactive catalyst;

b. monitoring the tritium concentration of the air being introduced to the catalytic reactor; and

c. flooding the catalytic reactor with hydrogen gas, while said catalytic reacor continues to be on stream, when the monitoring detects a tritium concentration above said low concentration by a prespecified amount so that additional catalyst is activated to convert the additional amounts of tritium entering the catalytic reactor

so that accidental release of tritium due to a rapid increase in its concentration in the room air is prevented.

5. In a system including a catalytic oxidation reactor to



which air, which has been associated with a nuclear reactor and normally contains as a result a low concentration of generated tritium, is introduced to remove such tritium by converting it to tritiated water vapor, the improvement comprising:

a. said catalytic reactor having therein under normal operation a substantial amount of inactive catalyst;

b. means for monitoring the tritrium concentration of the room air prior to introduction into said catalytic reactor; and

c. means for flooding hydrogen gas into the catalytic reactor, while said catalytic reactor continues to be on stream in respnse to the monitoring means detecting a tritium concentration above said low concentration by a prespecified level amount

so that accidental release of tritium due to a rapid increase in its concentration in the room air is prevented.

4,196,177

PROCESS FOR PRODUCING BORON COMPOUNDS FROM BORATE ORES

Stephen I. Sallay, 2101 Coliseum Blvd. East, Fort Wayne, Ind. 46805

Filed Jul. 24, 1978, Ser. No. 927,340

Int. Cl.[2] C01B *35/10*

U.S. Cl. 423—279 **15 Claims**

1. A process for producing purified ammonium pentaborate from a finely ground alkali metal or alkaline earth metal tetraborate ore, comprising contacting said ore with ammonium sulphite in the presence of methanol and sufficient water whereby the trimethylborate-ammonia adduct intermediate formed hydrolyzes into ammonium pentaborate, separating the resulting methanol solution of said ammonium pentaborate from the concurrently formed methanol-insoluble alkali metal or alkaline earth metal sulphites and gangue, and recovering said ammonium pentaborate from said solution.

14. A process for producing trimethyl borate-ammonia adduct from a finely ground anhydrous alkali metal or alkaline earth metal borate ore, comprising contacting said ore with ammonium sulphite in the presence of methanol and recovering said adduct from the reaction mixture.

4,196,178

PROCESS FOR PRODUCING METALLIC NITRIDE POWDER

Tadashi Iwai; Takashi Kawahito, both of Ube, and Tetsuo Yamada, Settsu, all of Japan, assignors to Ube Industries, Ltd., Yamaguchi, Japan

Filed Apr. 6, 1979, Ser. No. 27,879
Claims priority, application Japan, May 8, 1978, 53-53713
Int. Cl.[2] C01B *21/06*
U.S. Cl. 423—290 5 Claims

1. In a process for producing metallic nitride powder wherein a metallic halide is reacted with liquid ammonia to form a metallic amide or metallic imide, the resulting metallic amide or metallic imide is separated from the reaction mixture and the separated product is thermally decomposed in an atmosphere of nitrogen or ammonia to produce metallic nitride powder, the improvement which comprises carrying out the reaction in the presence of an organic solvent having a specific gravity higher than that of the liquid ammonia, said organic solvent and the liquid ammonia being not soluble or only slightly soluble with each other at the reaction temperature employed, by first charging liquid ammonia and the organic solvent into a reaction vesel with the organic solvent and liquid ammonia separating into two layers; an upper liquid ammonia layer and a lower organic solvent layer, and then introducing the metallic halide into the lower organic solvent layer; the so introduced metallic halide diffusing through the organic solvent layer and reacting with the liquid ammonia at the interface of the two layers to deposit metallic amide or metallic imide at said interface and form ammonium chloride which is absorbed into the liquid ammonia layer.

4,196,179

PROCESS FOR PREPARING HIGH CYCLIC PHOSPHONITRILIC HALIDES

John W. Hudson, and Thomas F. Dominick, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Jul. 3, 1975, Ser. No. 592,875
Int. Cl.[2] C01B *25/10*
U.S. Cl. 423—300 17 Claims

1. A process for the preparation of phosphonitrilic chloride mixtures containing a high proportion of cyclic trimer and tetramer and substantially no petroleum ether insoluble phosphonitrilic chloride species, said process comprising reacting phosphorus trichloride, chlorine and ammonia in a stirred solvent at a temperature of from about 65° to about 180° C., wherein the reactants are simultaneously added to the solvent at a rate such that the concentration of phosphorus trichloride is at most stoichiometric relative to the concentration of chlorine and ammonia and such that the formation of said petroleum ether insoluble phosphonitrilic chloride species is suppressed and recovering the cyclic phosphonitrilic chloride mixture produced.

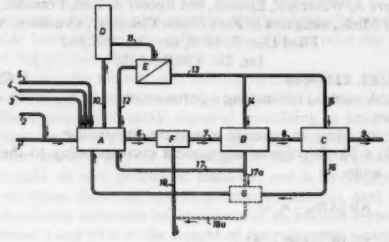
4,196,180

PURIFICATION OF PHOSPHORIC ACID BY MEANS OF ORGANIC SOLVENTS

Bernhard Wojtech, Bad Soden; Klaus P. Ehlers, Hurth-Knapsack, and Wolfgang Scheibitz, Leverkusen, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Hurth Knapsack, Fed. Rep. of Germany

Continuation of Ser. No. 715,627, Aug. 18, 1976, abandoned, which is a continuation of Ser. No. 482,987, Jun. 25, 1974, abandoned. This application Feb. 27, 1978, Ser. No. 881,516
Claims priority, application Fed. Rep. of Germany, Jul. 4, 1973, 2334019
The portion of the term of this patent subsequent to Dec. 7, 1993, has been disclaimed.
Int. Cl.[2] C01B *25/22*
U.S. Cl. 423—321 S 14 Claims

1. In a process for purifying an impure aqueous phosphoric acid solution containing dissolved impurities by mixing in a mixing zone the impure aqueous phosphoric acid solution with an organic solvent, which is immiscible or partially miscible with water and in which phosphoric acid is soluble, in a ratio by volume of the said phosphoric acid solution to the solvent within the range 1:0.3 to 1:30; the said organic solvent having a boiling point higher than that of water or of any resulting water/solvent azeotrope; the improvement which comprises mixing together the said phosphoric acid solution with the said organic solvent in a single-step operation, heating the aqueous phosphoric acid/solvent mixture to the distilling temperature of water; maintaining the said temperature for as long as necessary to distil off substantially all uncombined water originally



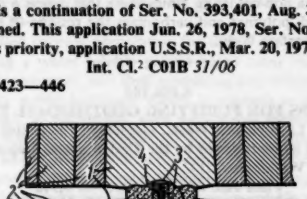
present in the said mixture and obtain in the mixing zone an anhydrous organic phosphoric acid solution together with a solid residue consisting of impurities originally present in the said impure aqueous phosphoric acid solution being not dissolved by the said anhydrous organic phosphoric acid solution; condensing any water/azeotrope formed and separating it into water and saturated organic solvent and recycling the saturated organic solvent so obtained to the mixing zone; separating the anhydrous organic phosphoric acid solution from the said residue by decantation, centrifugation or filtration, and recovering pure phosphoric acid from the separated organic phosphoric acid solution.

4,196,181

MICROCRYSTALLINE MONOLITHIC CARBON MATERIAL

Leonid F. Vereschagin, Kutuzovsky prospekt, 1/2, kv. 231; Evgeny N. Yakovlev, ulitsa Kravchenko 8, kv. 240; Vladislav N. Slesarev, mikroraion 4 "a", korpus 11, kv. 130; Vasily A. Stepanov, ulitsa Shvernika, 6/2, korpus 2, kv. 32; Alexandr Y. Preobrazhensky, ulitsa Profsojuznaya 52, korpus 5, kv. 21, all of Moscow; Tatyana D. Varfolomeeva, ulitsa Shkolnaya, 6, kv. 35, Moskovskaya oblast, Podolsky ralon, p/o Akademgorodek, and Ljudmila E. Shterenberg, B. Dekabrskaya ulitsa, 18, korpus 13, kv. 21, Moscow, all of U.S.S.R.

Continuation of Ser. No. 511,799, Oct. 3, 1974, abandoned, which is a continuation of Ser. No. 393,401, Aug. 31, 1973, abandoned. This application Jun. 26, 1978, Ser. No. 918,766
Claims priority, application U.S.S.R., Mar. 20, 1973, 1890751
Int. Cl.[2] C01B *31/06*
U.S. Cl. 423—446 2 Claims



1. A microcrystalline monolithic material of carbon crystallized to a diamond structure, consisting of intergrown grains varying in size from 0.1 to a few microns, said grains being coalesced with each other to form regular aggregates, said

material having a reproducible, predetermined geometric shape corresponding to that of its non-diamond carbon-bearing material precursor, a density higher than 3.55 g/cm^3, an abrasion resistance higher than 100,000 an oxidation temperature in the air higher than 700° C., a hardness such that it scratches the octahedral surface of diamond, a lattice constant a_0=3.566 Å at a temperature of 25° C. and a pressure of 1 atm., and a preset surface finish within 10–60 microns.

4,196,182

MOLDING ARTICLES WHICH CAN BE CONVERTED TO POROUS CARBON BODIES

Pierre A. Willermet, Livonia, and Robert A. Pett, Franklin, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 7, 1978, Ser. No. 967,552
Int. Cl.^{2} C01B *31/02*
U.S. Cl. 423—449 **5 Claims**

1. A method for making a porous carbon body, which comprises:

(A) providing an intimate admixture comprising:

(1) a block polymer component corresponding to the formula

$$AB(AB)_{\eta}-A, \text{ or} \quad (a)$$

$$X-(B-(AB)_{\eta}-A)_{\eta'}, \quad (b)$$

both 1(a) and 1(b) (c)

in which η is zero or a positive integer, η' is a positive integer greater than 2, A is a linear or branched polymer that is glassy or crystalline at 20°–25° C. and has its softening point in a range between about 80°–250° C. and B is a polymer of different chemical composition from A that behaves as an elastomer at a temperature between 15° C. below the softening point of A and 120° C., and X is a multifunctional linking group, A or B;

(2) a plasticizer for (A) which is selected from the group consisting of

(a) an oil at least 75 percent by weight of which boils in the range of about 550° F. to about 1038° F. has a viscosity at 210° F. in the range of about 30 to about 220 Saybolt Universal Seconds and aniline point in the range of about 170° F. to about 255° F.,

(b) a wax melting at a temperature of about 130° F. to about 170° F. at least 75 percent by weight of which boils at temperatures in the range of about 600° F. to about 900° F., and

(c) both 2(a) and 2(b);

(3) one or more carbonaceous or carbon yielding materials in particulate form;

(B) forming with heat and pressure the intimate admixture into a molded body;

(C) exposing to gradually elevating temperature the molded body in a non-oxidizing atmosphere that expels a portion of the block polymer and carbonizes the residue to provide a porous carbon body.

4,196,183

PROCESS FOR PURIFYING GEOTHERMAL STEAM

Charles T. Li, Richland, Wash., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 24, 1979, Ser. No. 5,942
Int. Cl.^{2} C01B *17/04*; B01D *53/34*
U.S. Cl. 423—573 G **5 Claims**

1. A process for purifying steam from geothermal sources containing hydrogen sulfide and a minor amount of other non-condensable gases comprising:

adding at least a stoichiometric amount of O_2 to the steam containing the hydrogen sulfide; and

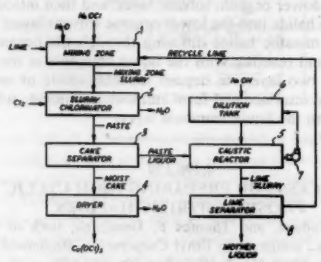
passing the steam containing oxygen at a temperature above its saturation temperature and below about 235° C. through a reactor packed with activated carbon to oxidize the hydrogen sulfide to elemental sulfur and water whereby the elemental sulfur is adsorbed on the activated carbon while the water passes through the bed with the steam, thereby purifying the steam.

4,196,184

LIME RECOVERY PROCESS

Walter J. Sakowski, Cleveland, Tenn., assignor to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 590,230, Jun. 25, 1975, abandoned, which is a continuation-in-part of Ser. No. 340,121, Mar. 12, 1973, Pat. No. 3,895,099, which is a continuation-in-part of Ser. No. 257,768, May 30, 1972, abandoned. This application Jun. 27, 1978, Ser. No. 919,514
Int. Cl.^{2} C01F *11/02*; C04B *1/00*
U.S. Cl. 423—639 **19 Claims**



1. In a process for recovering lime from an aqueous solution of calcium hypochlorite wherein lime is precipitated in a reaction zone by the reaction of an alkali metal hydroxide with said aqueous solution, and recovering the solid lime particles produced thereby, the improvement which comprises reacting said alkali metal hydroxide with said aqueous solution in proportion sufficient to maintain the pH of the range from about 12.1 to 12.6, whereby a mixture of crystalline particles of hemi-basic calcium hypochlorite and lime is formed.

4,196,185

IMMUNOASSAY FOR PHENCYCLIDINE

Antonino Focella, Clifton, and John E. Heveran, Fairfield, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Jun. 5, 1978, Ser. No. 912,272
Int. Cl.^{2} A61K *43/00*; G01N *33/16*
U.S. Cl. 424—1 **9 Claims**

5. A method for the assay of phencyclidine in a sample which method comprises mixing said sample with known amounts of a ^{125}I-labelled phencyclidine derivative and an antibody which will selectively complex with phencyclidine, said antibody being elicited in the blood of a host animal by immunization with the immunogen of claim 3, separating antibody bound antigen from free antigen and then measuring the radioactivity of either the free or bound antigen and comparing said value to values obtained previously with samples containing known amounts of phencyclidine.

4,196,186

METHOD FOR DIAGNOSING MALIGNANT GLIOL BRAIN TUMORS

Samuel Bogoch, 46 E. 91st St., New York, N.Y. 10028

Continuation of Ser. No. 621,112, Oct. 9, 1975, abandoned, which is a continuation-in-part of Ser. No. 553,075, Feb. 25, 1975, abandoned, which is a continuation-in-part of Ser. No. 550,432, Feb. 18, 1975, abandoned, which is a continuation-in-part of Ser. No. 450,404, Mar. 12, 1974, abandoned, which is a continuation-in-part of Ser. No. 385,451, Aug. 3, 1973, abandoned. This application Nov. 17, 1977, Ser. No. 852,200

Int. Cl.[2] G01N *21/00, 31/02, 31/22, 33/16*

U.S. Cl. 424—12 2 Claims

1. A method for diagnosing malignant gliol brain tumors which comprises:

a. dividing a sample of body fluid into a first and second aliquot;

b. contacting said first aliquot with a complex of Malignin and an inert carrier for about two hours to allow protein to bind to said complex;

c. separating from said first aliquot said complex and the protein bound to it;

d. cleaving the bound protein from said complex;

e. quantitatively determining the amount of protein cleaved from said complex;

f. contacting said second aliquot with a complex of Malignin and an inert carrier for about 10 minutes to allow protein to bind to said complex;

g. separating from said second aliquot said complex and the protein bound to it;

h. cleaving the bound protein from said complex;

i. quantitatively determining the amount of protein cleaved from said complex;

j. comparing the amount of protein determined in step e, above, with that determined in step i, above; and correlating the difference between the two amounts with a predetermined standard value indicative of the gliol brain tumor,

wherein said Malignin is a product derived from brain tumor cells, which forms a single line precipitate with its specific antibody in quantitative precipitin tests and in Ouchterlony gel diffusion tests, is soluble in water and aqueous solutions having an acid or neutral pH, and insoluble at an alkaline pH, and has a spectrophotometric absorption peak wave length of 280 mu, a molecular weight of about 10,000 and an amino acid composition approximately as follows:

	Approx. No. of Residues
Aspartic Acid	9
Threonine	5
Serine	5
Glutamic Acid	13
Proline	4
Glycine	6
Alanine	7
Valine	6
½ Cystine	1
Methionine	2
Isoleucine	4
Leucine	8
Tryosine	3
Phenylalanine	3
Lysine	6
Histidine	2
Arginine	5
Approximate Total	89

the amino acids cysteic, hydroxyproline, norleucine, ammonia, isodesmosine, hydroxylysine, lysinonorleucine and gammaaminobutyric acid being absent in detectable amounts.

4,196,187

RUMEN-STABLE PELLETS

Clarence C. Dannelly, and Richard E. Ardell, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 2, 1977, Ser. No. 830,282

Int. Cl.[2] A61K *9/24, 9/00, 9/22, 9/32*

U.S. Cl. 424—21 8 Claims

1. A method of preparing pellets having a core material and coating adapted for oral administration to ruminants wherein said core material is beneficial to the ruminant postruminally, said coating protecting the core material in the rumen and releasing it in the abomasum, said method comprising

(a) mixing with said core material a physiologically acceptable basic substance in sufficient quantity to raise the pH of the mixture above about 5.68,

(b) forming the mixture into self-supporting pellets, and

(c) coating said mixture with a composition comprising a film-forming polymeric material containing at least one basic amino grouping, the nitrogen content of which is from about 2 to 14% by weight of the total molecular weight of said polymeric material, and a hydrophobic substance dispersed in said polymeric material, said hydrophobic substance being present in an amount between about 1 and 50% of the weight of the polymeric material, said coating making up about 5 to about 50% of the weight of said pellet and having a sticking temperature of greater than about 50° C.

4,196,188

ORALLY ADMINISTRABLE FORM OF PROGESTERONE

Jean-Louis A. Besins, 23 rue Raynouard, 75016 Paris, France

Filed Jan. 12, 1977, Ser. No. 759,277

Int. Cl.[2] A61K *9/48*

U.S. Cl. 424—37 1 Claim

1. An effective orally administrable soft gelatin capsule essentially containing micronised particles of recrystallized progesterone at least 80% having a particle size of from 5 to less than about 15 microns, in an oil vehicle, said micronized particles having been micronized in said oil phase.

4,196,189

DENTAL AND ORAL HYGIENE PREPARATIONS

Helmut Raaf, Bad Schwalbach, and Helmar R. Wagner, Darmstadt Arheilgen, both of Fed. Rep. of Germany, assignors to Blendax-Werke R. Schneider, Mainz, Fed. Rep. of Germany

Division of Ser. No. 886,469, Mar. 14, 1978. This application Apr. 9, 1979, Ser. No. 28,533

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1977, 2712161

Int. Cl.[2] A61K *9/48, 9/16, 9/18*

U.S. Cl. 424—37 8 Claims

1. A filled capsule preparation for dental and oral hygiene comprising a water soluble gelatin based outer shell and an inner filling material, said shell containing a hydrophilic, odontologically active substance which is released as the shell is worn away in the mouth with said active substance being selected from the group consisting of a water soluble inorganic fluoride, an organic fluoride, a fluorosilicate, a zinc compound, a phosphoric acid, a complex-forming polycarboxylic acid, a water-soluble inorganic phosphate, a water-soluble phosphoric acid ester of a polyhydric alcohol, a water-soluble antimicrobial agent, and mixtures thereof, and said inner filling material comprising a hydrophobic substance selected from the group consisting of natural fats and waxes, synthetic fats and waxes, phospholipids, abietic acid or a salt thereof, cholesterol, lanosterol, a fatty alcohol, a long chain fatty acid, lipophilic salts or esters of long chain fatty acids, a long chain amine, a peptide, a lipoprotein, a lipoproteic acid, a silicone oil, and mixtures thereof.

4,196,190

ACRYLIC HAIR SETTING RESINS HAVING HIGH RESISTANCE TO MOISTURE AND RAPID REMOVABILITY FROM THE HAIR WITH SHAMPOO

David R. Gehman, Harleysville, and William A. Kirn, Abington, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 706,336, Jul. 19, 1976,. This application Jan. 9, 1978, Ser. No. 867,732

Int. Cl.[2] A61K 7/11; C08F 16/04

U.S. Cl. 424—47 10 Claims

1. A hair setting composition for application to human hair to cosmetically set and hold the same for a reasonable period of time and which is readily removable therefrom by shampoo treatment which comprises (A) a film forming copolymer of (1) 10–30% by weight of an alkyl acrylate having a straight or branched chain alkyl group of 2 to less than 8 carbon atoms or mixture thereof, (2) 41–60% by weight of methyl methacrylate, (3) 5–20% by weight of hydroxyethyl methacrylate, and (4) 12–30% methacrylic acid, which copolymer has a calculated glass transition temperature, Tg, within the range of about 40°–80° C., a molecular weight within the range of about 25,000 to 250,000, and not more than about 50 ppm of unreacted alkyl acrylate monomer, and (B) a cosmetically acceptable organic solvent for said film forming copolymer, wherein (A) is dissolved in (B) in an amount of 1 to 15% by weight of the composition with the required amount of organic amine neutralizer to achieve acceptable performance.

9. An aerosol hair spray composition comprising between 30 and 70 weight percent of components A and B of claim 1 and between 70 and 30 weight percent of a spraying agent selected from the group consisting of halogenated hydrocarbons, compressed gases, volatile hydrocarbons and mixtures thereof.

4,196,191

BIOLOGICAL PREPARATIONS

June D. Almeida, London, and David C. Edwards, Beckenham, both of England, assignors to Burroughs Wellcome Co., Research Triangle Park, N.C.

Continuation of Ser. No. 882,445, Mar. 1, 1978, Pat. No. 4,148,876, which is a continuation-in-part of Ser. No. 727,610, Sep. 28, 1976, abandoned. This application Mar. 30, 1979, Ser. No. 25,614

Claims priority, application United Kingdom, Sep. 29, 1975, 39857/75

Int. Cl.[2] A61K 39/12

U.S. Cl. 424—89 21 Claims

1. An antigenic virosome preparation containing a plurality of microvesicles which microvesicles are unilamellar bodies having a single lipid bilayer upon the exterior surface of which is bound by hydrophobic bonding an antigenic protein, said antigenic protein being a haemagglutinin sub-unit of protective surface antigen derived from a virus selected from a measles virus and a corona virus, and having hydrophobic region.

4,196,192

COMBINED *HAEMOPHILUS INFLUENZAE* TYPE B AND PERTUSSIS VACCINE

Joseph S. C. Kuo, Orangeburg, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Filed Oct. 28, 1977, Ser. No. 846,466

Int. Cl.[2] A61K 39/02

U.S. Cl. 424—92 9 Claims

1. A combined vaccine that elicits effective levels of anti-PRP (polyribosyl ribitol phosphate) and anti-pertussis antibody formations in young warm-blooded animals which consists of polyribosyl ribitol phosphate isolated and purified from the capsular polysaccharide of *Haemophilus influenzae* type b by adding hydroxylapatite in about 20 millimolar phosphate buffer at pH from about 6.7 to about 6.9, mixing at a temperature of about 1° to 4° C., centrifuging, and removing the supernatant and repeating the foregoing procedure at least 2 more times, filtering the supernatant, dializing against pyrogen free distilled water, and then lyophilizing; and *Bordetella pertussis* antigens.

4,196,193

ANTIBACTERIAL COMPOSITION

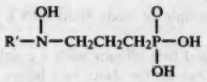
Hiroshi Imanaka, Mishima, and Minoru Nishida, Kyoto, both of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Feb. 15, 1978, Ser. No. 877,944

Int. Cl.[2] A61K 35/00

U.S. Cl. 424—114 7 Claims

1. An antibacterial composition containing a mixture comprising a phosphonic acid derivative of the formula:



wherein R′ is formyl or acetyl, or its pharmaceutically acceptable salt and nocardicin A or its pharmaceutically acceptable salt, the proportions of the phosphonic acid derivative or its pharmaceutically acceptable salt to the nocardicin A or its pharmaceutically acceptable salt being in the range of 1:2 to 2:1 by weight.

4,196,194

FEEDING DAIRY CATTLE

Elmer F. Glabe, Northbrook, Ill., and Herbert J. Rebhan, New Richmond, Wis., assignors to Food Technology Products, Chicago, Ill.

Continuation-in-part of Ser. No. 874,430, Feb. 2, 1978, abandoned. This application Aug. 21, 1978, Ser. No. 935,540

The portion of the term of this patent subsequent to Mar. 29, 1996, has been disclaimed.

Int. Cl.[2] A23K 1/00

U.S. Cl. 424—177 10 Claims

1. A process of feeding dairy cattle which comprises feeding dairy cattle with a quantity of sodium diacetate and dehydrated whey mixed together and fed as a feed additive as such or in a mixed feed, in sufficient proportions to enhance the milk production of such cattle, the quantity of sodium diacetate being within the range of 0.025% to 0.25% by weight of the feed and the quantity of dehydrated whey being at least 4% by weight of the total sodium diacetate and whey, the weight ratio of sodium diacetate to dehydrated whey being within the range of 25:1 to 1:4.

4,196,195

FEEDING BEEF CATTLE

Elmer F. Glabe, Northbrook, Ill., and Herbert J. Rebhan, New Richmond, Wis., assignors to Food Technology Products, Chicago, Ill.

Filed Oct. 20, 1978, Ser. No. 953,026

The portion of the term of this patent subsequent to Dec. 11, 1996, has been disclaimed.

Int. Cl.[2] A23K 1/00

U.S. Cl. 424—177 10 Claims

1. A process of feeding beef cattle which comprises feeding beef cattle with a quantity of sodium diacetate and dehydrated whey mixed together and fed as a feed additive as such or in a mixed feed, in sufficient proportions to enhance feed efficiency of such beef cattle, the quantity of sodium diacetate being within the range of 0.025% to 0.25% by weight of the feed and the quantity of dehydrated whey being at least 4% by weight of the total sodium diacetate and whey, the weight ratio of sodium diacetate to dehydrated whey being within the range of 25:1 to 1:4.

4,196,196

DIVALEN/MONOVALENT BIPOLAR CATION THERAPY FOR ENHANCEMENT OF TISSUE PERFUSION AND REPERFUSION IN DISEASE STATES

Ivan C. Tiholiz, 18250 Roscoe Blvd., Northridge, Calif. 91324

Filed Jun. 19, 1978, Ser. No. 917,075
Int. Cl.[2] A61K *37/26*
U.S. Cl. 424—178 1 Claim

1. An aqueous solution for enhancing tissue perfusion or reperfusion in animals and humans comprising about 3 to about 25% glucose, insulin approximately in the ratio of 1 unit of insulin for each 2 grams of glucose and MgK_2EDTA in an amount to supply from about 0.02 to about 0.04 mEq/ml of ionic potassium and magnesium.

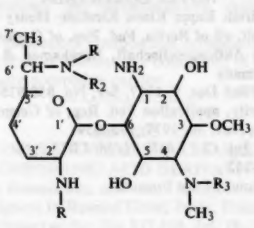
4,196,197

2'N-ACYL AND ALKYL-6'-N-ALKYL- AND 6',6'-DI-N-ALKYL DERIVATIVES OF FORTIMICINS A AND B

John S. Tadanier, and Jerry R. Martin, both of Waukegan, Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Dec. 21, 1977, Ser. No. 863,008
Int. Cl.[2] A61K *31/71*; C07H *15/22*
U.S. Cl. 424—180 10 Claims

1. A 2'-N-substituted fortimicins A and B of the formula:



wherein: R is acyl

wherein Y is loweralkyl, aminoacyl, N-monoloweralkylaminoacyl, N,N-diloweralkylaminoacyl, hydroxy-substituted aminoacyl, an amino acid residue, loweralkyl, aminoloweralkyl, hydroxyloweralkyl, N-loweralkylaminoloweralkyl, N,N-diloweralkylaminoloweralkyl, aminohydroxyloweralkyl, N-loweralkylaminohydroxyloweralkyl, or N,N-diloweralkylaminohydroxyloweralkyl; R_1 is loweralkyl; R_2 is hydrogen or loweralkyl; and R_3 is acyl

wherein Y is loweralkyl, aminoacyl, N-monoloweralkylaminoacyl, N,N-diloweralkylaminoacyl, hydroxy-substituted aminoacyl, an amino acid residue, loweralkyl, aminoloweralkyl, hydroxyloweralkyl, N-loweralkylaminoloweralkyl, N,N-diloweralkylaminoloweralkyl, aminohydroxyloweralkyl, N-loweralkylaminohydroxyloweralkyl, N,N-diloweralkylaminohydroxyloweralkyl or hydrogen; and the pharmaceutically acceptable salts thereof.

10. A method of treating infection comprising administering a therapeutically effective amount of a compound of claim 1 to a mammalian patient infected with one or more susceptible organisms.

4,196,198

ANTIBIOTIC BM123-ALKYL SULFATE COMPLEXES

Martin Tobkes, Spring Valley, and Murray Dann, Pearl River, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

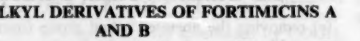
Filed Feb. 2, 1978, Ser. No. 874,306
Int. Cl.[2] A61K *31/70, 31/71*
U.S. Cl. 424—180 13 Claims

1. A process of recovering an antibiotic trans-BM123γ-alkyl sulfate complex from a fermentation whole harvest mash containing antibiotic trans-BM123γ which comprises the steps of:

(a) producing a fermentation liquor by clarifying the whole harvest mash;

(b) acidifying the fermentation liquor to a pH of from 1.9 to 5.0;

(c) adding to the acidified liquor, in amount sufficient to produce a complex with the antibiotic trans-BM123γ, a complexing agent selected from the group consisting of compounds of the formula:



wherein n is an integer from 9 to 17, inclusive, and M is sodium or potassium, and mixtures thereof;

(d) removing the precipitated antibiotic trans-BM123γ-alkyl sulfate complex; and

(e) drying the antibiotic trans-BM123γ-alkyl sulfate complex.

4,196,199

ANTIBIOTIC BM123 SYNTAN COMPLEXES

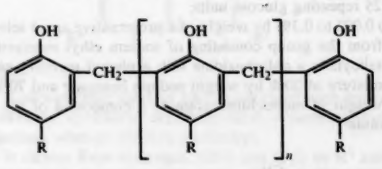
Martin Tobkes, Spring Valley, and Murray Dann, Pearl River, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Feb. 2, 1978, Ser. No. 874,307
Int. Cl.[2] A61K *31/70, 31/71*
U.S. Cl. 424—180 7 Claims

1. A process of recovering an antibiotic trans-BM123γ—syntan complex from a fermentation whole harvest mash containing antibiotic trans-BM123γ which comprises the steps of:

a. producing a fermentation liquor by filtering the whole harvest mash;

b. adding to the fermentation liquor a syntan complexing agent comprising a mixture of compounds of the formula:



wherein R is hydrogen or methylene sulfonic acid and n is 0, 1, 2, 3, or 4 with the proviso that about half of the R's present are methylene sulfonic acid, until a sufficient amount of the antibiotic trans-BM123γ—syntan complex is imparted to said medium;

c. adjusting the medium to a pH of from 1.8 to 5.0 with a pharmacologically acceptable acid or base;

d. removing the precipitated antibiotic trans-BM123γ—syntan complex; and

e. drying the antibiotic trans-BM123γ—syntan complex.

4,196,200

ANTIBIOTIC BM123-DIOCTYL SULFOSUCCINATE COMPLEXES

Martin Tobkes, Spring Valley, and Murray Dann, Pearl River, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Feb. 2, 1978, Ser. No. 874,308
Int. Cl.[2] A61K *31/70, 31/71*
U.S. Cl. 424—180 11 Claims

1. A process of recovering an antibiotic trans-BM123$_\gamma$-dioctyl sulfosuccinate complex from a fermentation whole harvest mash containing antibiotic trans-BM123$_\gamma$ which comprises the steps of:

(a) producing a fermentation liquor by filtering the whole harvest mash;

(b) acidifying the fermentation liquor to a pH of from 2.5 to 6.0 with a pharmacologically acceptable acid;

(c) adding to the acidified liquor, in amount sufficient to produce a complex with the antibiotic trans-BM123$_\gamma$, a complexing agent selected from the group consisting of the alkali metal and alkaline earth metal salts of sulfobutanedioic acid 1,4-bis(2-ethylhexyl)ester and mixtures thereof;

(d) removing the precipitated antibiotic trans-BM123$_\gamma$ - dioctyl sulfosuccinate complex; and

(e) drying the antibiotic trans-BM123$_\gamma$-dioctyl sulfosuccinate complex.

4,196,201

NON-IRRITATING EYE MAKE-UP REMOVER COMPOSITION

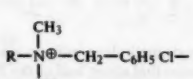
Jean-Paul Boelle; Constantin Koulbanis, and Arlette Zabotto, all of Paris, France, assignors to L'Oreal, Paris, France

Filed May 12, 1978, Ser. No. 905,455
Claims priority, application France, May 18, 1977, 77 15292
Int. Cl.[2] A61K *31/70*
U.S. Cl. 424—180 10 Claims

1. An eye make-up remover composition which is non-irritating and does not provoke ocular difficulties comprising in an aqueous solution:

(i) 0.5 to 5% by weight of a surface active agent selected from the group consisting of alkyl polyglycosides and hydroxyalkyl polyglycosides, wherein the alkyl of each of said alkyl and hydroxyalkyl polyglycosides has 11 to 18 carbon atoms and wherein said polyglycoside contain 5 to 25 repeating glucose units;

(ii) 0.002 to 0.3% by weight of a preservative agent selected from the group consisting of sodium ethyl mercurithiosalicylate; a chlorhexidine salt; a phenyl mercury salt; a mixture of 30% by weight sodium benzoate and 70% by weight of monochloracetamide a compound of the formula



(I)

wherein

R is an alkyl of 12 to 18 carbon atoms or mixtures of compounds of formula I; and mixtures of the aforementioned preservative agents; and

(iii) a phosphate buffer;

the pH of said composition being from 6.5 to 7.5.

4,196,202

CARCINOSTATIC COMPOSITION CONTAINING 3-N-O-TOLUYL-5-FLUOROURACIL PRODUCING THE SAME

Taiji Okada, 26-41,, Motoujinamachi, Hiroshima, Japan

Filed Dec. 20, 1977, Ser. No. 862,591
Int. Cl.[2] A61K *31/505*
U.S. Cl. 424—199 3 Claims

1. A process for producing a composition containing 3-N-o-toluyl-5-FU which comprises the steps of:

(a) dispersing 1,3-di-N-o-toluyl-5-FU in a glyceride selected from the group consisting of triolein, tripalmitin, stearodiolen and palmitooleostearin,

(b) forming an emulsion containing water and a phospholipid,

(c) adding the mixture of (a) to the emulsion of (b) to form a resulting emulsion,

(d) permitting the resulting emulsion to stand at temperatures sufficient to liberate the toluyl group at the 1-position such that substantially all of the 1,3-di-N-o-toluyl-5-FU is converted to 3-N-o-toluyl-5-FU, and

(e) removing the liberated toluyl group from the resulting emulsion.

3. The emulsion produced according to steps (a)–(e) of claim 1.

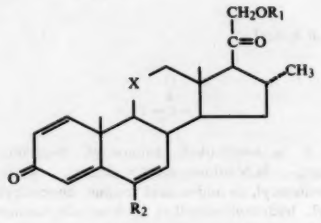
4,196,203

NOVEL CORTICOIDS

Joachim-Friedrich Kapp; Klaus Kieslich; Henry Laurent, and Karl Petzoldt, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Bergkamen & Berlin, Fed. Rep. of Germany

Filed Dec. 9, 1977, Ser. No. 858,975
Claims priority, application Fed. Rep. of Germany, Dec. 10, 1976, 2656575; Nov. 30, 1977, 2753839
Int. Cl.[2] A61K *31/56;* C07J *5/00*
U.S. Cl. 424—242 5 Claims

1. A compound of the formula



X is carbonyl; R_1 is a hydrogen atom or the acyl radical of an alkanoic or alkanedioic acid of up to 16 carbon atoms, and R_2 is fluorine, chlorine or methyl.

5. A method of treatment of inflammatory conditions in mammals which comprises administering to the afflicted mammal an anti-inflammatorily effective amount of a compound of claim 1.

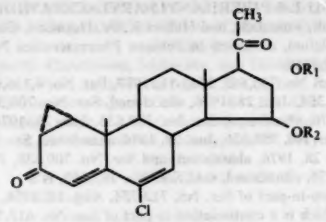
4,196,204

HYDROXYLATED 1 ALPHA, 2 ALPHA-METHYLENE STEROIDS

Karl Petzoldt; Hermann Steinbeck, and Walter Elger, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Filed Mar. 13, 1978, Ser. No. 886,014
Claims priority, application Fed. Rep. of Germany, Mar. 21, 1977, 2712861
Int. Cl.[2] A61K *31/58;* C07J *3/00*
U.S. Cl. 424—243 29 Claims

1. Hydroxylated 1α,2α-methylene steroids of the formula



wherein R_1 and R_2 are identical or different and each is (a) hydrogen; (b) the acyl group of an unsubstituted C_{1-18} alkane carboxylic or sulfonic acid; an unsubstituted C_{6-10} carbocyclic aromatic carboxylic or sulfonic acid; an unsubstituted C_{7-18} alkaromatic carboxylic or sulfonic acid of 1 or 2 aromatic rings; an unsubstituted C_{8-18} aralkane carboxylic or sulfonic acid of 1 or 2 aromatic rings; or a piperidino, morpholino, pyridine, furan, pyrrolidino or piperazino carboxylic or sulfonic acid; (c) said acyl groups of (b) substituted by COOH, lower alkyl, OH, lower alkoxy, oxo, amino or halogen; (d) for said C_{2-6} acyl groups of (c) which are substituted by OH, the corresponding acyl groups wherein the OH is esterified by a C_{2-18} alkanoyl or C_{2-18} alkyl sulfonyl group; (e) an esterifying group of a hydrohalic, sulphuric or phosphoric acid;

and for said 1α,2α-methylene steroids which are capable of salt formation, the physiologically acceptable salts thereof.

24. A pharmaceutical composition comprising an antiandrogenically effective amount of a compound of claim 1 and a pharmaceutically acceptable carrier.

4,196,205
3-ACETOXYMETHYL-7-(IMINOACETAMIDO)-CEPHALOSPORANIC ACID DERIVATIVES

René Heymes, Romainville, and André Lutz, Strasbourg, both of France, assignors to Roussel Uclaf, Paris, France

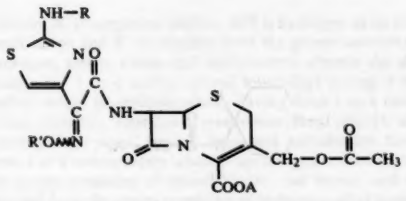
Continuation-in-part of Ser. No. 817,114, Jul. 19, 1977, Pat. No. 4,152,432, which is a continuation-in-part of Ser. No. 761,270, Jan. 21, 1977, abandoned. This application Jun. 30, 1978, Ser. No. 920,704

Claims priority, application France, Jan. 23, 1976, 76 01834; Jun. 11, 1976, 76 17743; Aug. 18, 1976, 76 25051; Mar. 11, 1977, 77 07307; Jul. 19, 1977, 77 22077

Int. Cl.[2] A61K *31/545*; C07D *501/34*

U.S. Cl. 424—246 **14 Claims**

1. A compound of the formula



wherein R is hydrogen, R' is selected from the group consisting of alkenyl and alkynyl of 2 to 4 carbon atoms, A is selected from the group consisting of hydrogen, alkali metal and equivalents of an alkaline earth metal, magnesium and a pharmaceutically acceptable organic amine base and the OR' group is in the syn position.

6. An antibiotic composition comprising an antibiotically effective amount of at least one compound of claim 1 and an inert pharmaceutical carrier.

11. A method of combatting bacterial infections in warm-blooded animals comprising administering to warm-blooded animals an antibacterially effective amount of at least one compound of claim 1.

4,196,206
PYRIDYL-PIPERAZINE DERIVATIVE WITH ANTI-ARRYTHMIC EFFECT

Arpád Molnár; Károly Felföldi; Mihály Bartók, all of Szeged; Egon Kárpáti, and László Szporny, both of Budapest, all of Hungary, assignors to Richter Gedeon Vegyeszeti Gyar RT, Budapest, Hungary

Filed Feb. 23, 1978, Ser. No. 880,364

Claims priority, application Hungary, Feb. 25, 1977, RI 617

Int. Cl.[2] A61K *31/495*; C07D *401/04*

U.S. Cl. 424—250 **4 Claims**

1. A pharmaceutical composition, which comprises as the active ingredient, 3-[4-(2'-pyridyl)-piperazin-1-yl]-1-(3,4,5-trimethoxy-benzoyloxy)-propane or a pharmaceutically acceptable acid-addition salt thereof, in admixture with a pharmaceutically acceptable diluent.

3. A method of treatment of heart dysfunction in an animal subject which comprises administering to the subject an antiarrythmically effective amount of 3-[4-(2'-pyridyl)-piperazin-1-yl]-1-(3,4,5-trimethoxy-benzoyloxy)-propane or a pharmaceutically acceptable acid-addition salt thereof.

4,196,207
PROCESS FOR CONTROLLING ERADICATING OR PREVENTING INFESTATIONS OF ANIMALS BY IXODID TICKS

Lionel G. Webber, D'Aguilar, Australia, assignor to ICI Australia Limited, ralia

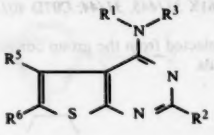
Filed May 9, 1978, Ser. No. 905,038

Claims priority, application Australia, May 23, 1977, PD0189

Int. Cl.[2] A61K *31/505*

U.S. Cl. 424—251 **20 Claims**

1. A process for the prevention of infestation of an animal by Ixodid ticks, or for the control or eradication of infestations of Ixodid ticks on an animal, which process comprises applying to an animal which is infested with Ixodid ticks or subject to such infestation, an effective amount of a composition comprising as active ingredient a thienopyrimidine derivative of general formula I:



I

wherein

R^1 is chosen from alkyl or alkyl substituted with hydroxy, methoxy, cycloalkyl, aryl, heteroaryl, or heterocycloalkyl groups; alkenyl; alkynyl; cycloalkyl;

R^3 is chosen from hydrogen, alkyl and acyl; or R^1 and R^3 together form a saturated or unsaturated alkylene or heteroalkylene bridging group;

R^2 is chosen from hydrogen, hydroxy, mercapto, halo, cyano, amino, mono- or di-alkyl substituted amino, hydrazino, alkyl, alkenyl, alkynyl, alkoxy, alkylthio, cycloalkyl, aralkyl, aryl and trifluoromethyl;

R^5 and R^6 are independently chosen from hydrogen, alkyl, halogen and aryl;

or R^5 and R^6 together form a saturated alkyl bridging group; or an optical isomer thereof; or a tautomer thereof; or a salt thereof; and a carrier therefor.

4,196,208
CERTAIN PYRIDYL ESTERS OF 4-(MONOALKYLAMINO) BENZOIC HYDROXYALKANOIC ACIDS

Robert G. Shepherd, South Nyack, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Filed Dec. 19, 1977, Ser. No. 861,736
Int. Cl.[2] C07D *213/69, 213/84, 213/66;* A61K *31/44*
U.S. Cl. 424—263 7 Claims

1. A compound of the formula:

wherein R_1 is an unbranched or branched alkyl group of the formula C_nH_{2n+1} wherein n is an integer from 8 to 19, inclusive, and R_3 is 3-pyridyl, 5-methyl-3-pyridyl, 2,6-dimethyl-3-pyridyl, 6-methoxy-3-pyridyl, 2-hydroxy-3-pyridyl, 6-chloro-3-pyridyl, 4-carboxy-3-pyridyl, 5-carboxy-3-pyridyl or 4-cyano-3-pyridyl; and the pharmaceutically acceptable acid-addition and cationic salts thereof.

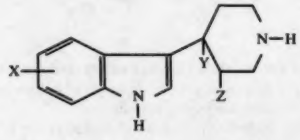
7. The compound of treating hyperlipidemia and hyperlipoproteinemia and/or altering the lipoprotein pattern in a mammal comprising administering to said mammal an effective lipid-altering amount of a compound in accordance with claim 1.

4,196,209
TREATING PSYCHIC DISORDERS WITH PIPERIDYL-INDOLES

Claude Dumont, Nogent-sur-Marne; Jacques Guillaume, Sevran, and Lucien Nedelec, Le Raincy, all of France, assignors to Roussel Uclaf, Paris, France

Filed Aug. 1, 1977, Ser. No. 820,835
Claims priority, application France, Aug. 26, 1976, 76 25798
Int. Cl.[2] A61K *31/445, 31/44;* C07D *401/04*
U.S. Cl. 424—267 16 Claims

1. A compound selected from the group consisting of compounds of the formula



wherein X is selected from the group consisting of fluorine, chlorine and bromine when Y and Z are hydrogen or together form a double bond and X is selected from the group consisting of hydrogen and alkoxy of 1 to 3 carbon atoms when Y and Z form a double bond and their non-toxic, pharmaceutically acceptable acid addition salts.

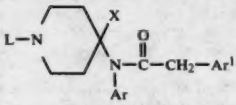
11. A method of treating psychic disorders in warmblooded animals comprising administering to warm-blooded aniamls an amount of at least one compound of claim 1 sufficient to relieve psychic disorders.

4,196,210
N-ARYL-N-(1-L-4-PIPERIDINYL)-ARYLACETAMIDES

Stefan Sanczuk, Vosselaar, and Hubert K. Fr. Hermans, Gierle, both of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

Division of Ser. No. 795,669, May 11, 1977, Pat. No. 4,126,689, Ser. No. 700,351, Jun. 28, 1976, abandoned, Ser. No. 700,352, Jun. 28, 1976, abandoned, Ser. No. 700,635, Jun. 28, 1976, abandoned, Ser. No. 700,636, Jun. 28, 1976, abandoned, Ser. No. 700,637, Jun. 28, 1976, abandoned, and Ser. No. 700,638, Jun. 28, 1976, abandoned, said Ser. No. 795,669, is a continuation-in-part of Ser. No. 713,756, Aug. 12, 1976, abandoned, which is a continuation-in-part of Ser. No. 615,131, Sep. 23, 1975, abandoned. This application Jul. 13, 1978, Ser. No. 924,484
Int. Cl.[2] A61K *31/445;* C07D *409/12*
U.S. Cl. 424—267 11 Claims

1. A chemical compound selected from the group consisting of an N-aryl-N-(4-piperidinyl)arylacetamide having the formula:



and the pharmaceutically acceptable acid addition salts thereof, wherein:

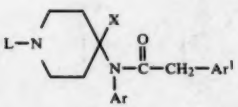
L is alkyl having from 1 to 10 carbon atoms;

Ar is a member selected from the group consisting of phenyl, mono- and di-substituted phenyl, wherein each substituent in said mono- and di-substituted phenyl is independently selected from the group consisting of halo and lower alkyl;

Ar^1 is thienyl; and

X is a member selected from the group consisting of hydrogen and lower alkyloxycarbonyl.

11. A method of treating cardiac arrhythmia which comprises the systemic administration to warm-blooded animals of an effective anti-arrhythmic amount of a chemical compound selected from the group consisting of an N-aryl-N-(4-piperidinyl)arylacetamide having the formula:



and the pharmaceutically acceptable acid addition salts thereof, wherein:

L is alkyl having from 1 to 10 carbon atoms;

Ar is a member selected from the group consisting of phenyl, mono- and di-substituted phenyl, wherein each substituent in said mono- and di-substituted phenyl is independently selected from the group consisting of halo and lower alkyl;

Ar^1 is thienyl; and

X is a member selected from the group consisting of hydrogen and lower alkyloxycarbonyl.

4,196,211
6-(α-HYDROXYETHYL)-7-OXO-1-AZABICYCLO[3.2.0-]HEPT-2-ENE-2-CARBOXYLIC ACID AND DERIVATIVES THEREOF

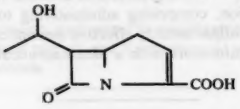
Burton G. Christensen, Metuchen, and David H. Shih, Edison, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 847,297, Oct. 31, 1977, abandoned, which is a continuation-in-part of Ser. No. 668,898, Mar. 22, 1976, abandoned. This application May 8, 1978, Ser. No. 903,436

Int. Cl.[2] C07D *487/04;* A61K *31/40*

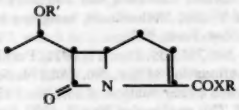
U.S. Cl. 424—274 4 Claims

1. A compound having the structure:



and the pharmaceutically acceptable salts thereof.

2. A compound having the structure:

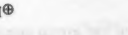


and the pharmaceutically acceptable salts thereof; wherein:

X is oxygen or sulphur;

R′ is selected from the group consisting of: hydrogen, loweralkyl having from 1 to 6 carbon atoms, allyl, 2-methyl-2-propenyl, benzyl, p-bromobenzyl, p-t-butylbenzyl, alkylthioalkyl having from 2 to 8 carbon atoms; acyl having the general formula:

or



wherein: X′ is oxygen or sulphur; $M^{\oplus}$ is hydrogen or an alkali metal cation and R″ is selected from the group consisting of hydrogen, amino, mono- and dialkylamino wherein the alkyl moiety has 1 to 6 carbon atoms; loweralkyl having 1 to 6 carbon atoms, phenylthio, alkoxy having from 1 to 6 carbon atoms; phenoxy, benzyloxy, p-nitrobenzyloxy, phenyl, allyl, 2-methyl-2-propenyl, benzyl, halo- and perhaloalkyl having from 1 to 6 carbon atoms wherein the halogen is selected from the group consisting of chloro, fluoro, and bromo; and R is selected from the group consisting of hydrogen, alkyl having 1 to 6 carbon atoms; phenacyl, p-bromophenacyl, pivaloyloxymethyl, halo- and perhaloalkyl having 1 to 6 carbon atoms wherein the halogen is chloro, fluoro or bromo; alkenyl having from 2 to 6 carbon atoms; benzyl, benzhydryl, p-t-butylenzyl, p-bromobenzyl, phthalidyl, 5-indanylmethyl, phenyl, 5-indanyl, acetylthiomethyl, acetylthioethyl, pivaloylthiomethyl, alkylthioalkyl, having 2–6 carbon atoms; and X is oxygen.

4. An antibiotic pharmaceutical composition consisting essentially of, in unitary dosage form, a therapeutically effective amount of a compound according to claim 1 and a pharmaceutical carrier therefor.

4,196,212
N-PHENYL AMIDINES

Yao H. Wu, and Walter G. Lobeck, Jr., both of Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

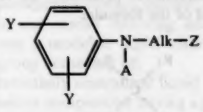
Division of Ser. No. 609,885, Sep. 2, 1975, Pat. No. 4,049,714, which is a division of Ser. No. 466,753, May 3, 1974, abandoned, which is a continuation-in-part of Ser. No. 255,701, May 22, 1972, Pat. No. 3,816,454, which is a continuation-in-part of Ser. No. 47,589, Jun. 18, 1970, abandoned. This application Jul. 25, 1977, Ser. No. 818,623

Int. Cl.[2] C07D *295/64, 279/10;* A61K *31/34, 31/38, 31/535, 31/54*

U.S. Cl. 424—275 5 Claims

1. A compound selected from the group consisting of N-phenyl amidines of Formula I

Formula I



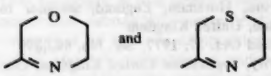
and pharmaceutically acceptable acid addition salts of compounds of Formula I wherein

Alk—is alkylene having 1 or 2 carbon atoms;

X and Y—are independently selected from the group consisting of hydrogen, halogen, trifluoromethyl, lower alkoxy of from 1 to 4 carbon atoms inclusive, lower alkyl of from 1 to 4 carbon atoms inclusive;

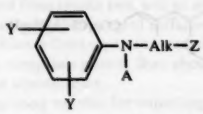
A—is selected from the group consisting of phenyl, 2-thienyl and 2-furyl; and

Z—is selected from the group consisting of



4. The process of eliciting a therapeutic effect selected from the group consisting of diuretic, antithrombogenic, smooth muscle relaxant, anti-inflammatory and antiarrhythmic in a mammal which comprises administering thereto a non-toxic oral dose of from about 0.1 to 100 mg./kg. of body weight of said mammal of a compound selected from the group consisting of N-phenyl amidines of Formula I

Formula I



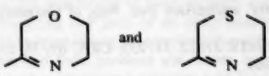
and pharmaceutically acceptable acid addition salts of compounds of Formula I wherein

Alk—is an alkylene radical containing 1 or 2 carbon atoms;

X and Y—are independently selected from the group consisting of hydrogen, halogen, trifluoromethyl, lower alkoxy of from 1 to 4 carbon atoms inclusive, lower alkyl of from 1 to 4 carbon atoms inclusive;

Z—is selected from the group consisting of phenyl, 2-thienyl and 2-furyl; and

A—is selected from the group consisting of



4,196,213
METHOD OF PRODUCING INFERTILITY IN MALE RODENTS

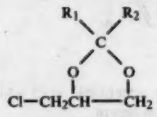
Gilbert A. Youngdale, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 736,943, Oct. 29, 1976, abandoned, which is a division of Ser. No. 601,487, Aug. 4, 1975, Pat. No. 4,012,520, which is a division of Ser. No. 386,536, Aug. 8, 1973, Pat. No. 3,930,012, which is a continuation of Ser. No. 93,383, Nov. 27, 1970, abandoned. This application Jun. 28, 1978, Ser. No. 920,877

Int. Cl.[2] A01N *9/12, 9/24*

U.S. Cl. 424—275 5 Claims

1. A method of producing epididymal lesions and infertility in male rodents which comprises supplying to said rodents in locales available to and frequented by said rodents a ration supplying an effective amount for producing the lesions and infertility of a compound of the formula:



wherein R_1 and R_2 are the same or different and are hydrogen, alkyl of from 1 to 17 carbon atoms, alkenyl of from 2 to 17 carbon atoms, phenyl, furyl or thienyl, and R_1 and R_2, taken together, can be a carbocyclic ring of up to 8 carbon atoms.

4,196,214
TREATMENT OF INFECTIONS

John P. Clayton, Horsham, England, assignor to Beecham Group Limited, United Kingdom

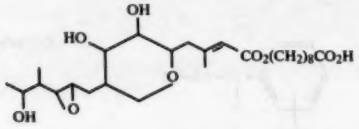
Filed Oct. 17, 1977, Ser. No. 842,399

Claims priority, application United Kingdom, Oct. 23, 1976, 44133/76

Int. Cl.[2] A61K *31/35*

U.S. Cl. 424—283 15 Claims

1. A method of treatment of mycoplasma-induced diseases in mammals, which comprises administering to a mammal suffering from such a disease, an effective amount of pseudomonic acid of the formula (I):



(I)

a pharmaceutically acceptable salt thereof or alkyl ester thereof of 1 to 6 carbon atoms.

4,196,215
ALKYNE COMPOUNDS AND METHOD OF USE

Joachim Gante; Hans-Adolf Kurmeier; Dieter Orth; Erich Schacht, and Albrecht Wild, all of Darmstadt, Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschraenkter Haftung, Darmstadt, Fed. Rep. of Germany

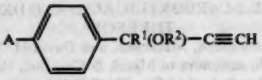
Division of Ser. No. 697,579, Jun. 18, 1976, Pat. No. 4,115,456. This application Jun. 28, 1978, Ser. No. 920,084

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1975, 2527352

Int. Cl.[2] A61K *31/22, 31/235;* C07C *69/78, 69/02*

U.S. Cl. 424—308 20 Claims

1. An alkyne compound of the formula



wherein R^1 is alkyl of up to 4 carbon atoms, R^2 is alkanoyl of up to 6 carbon atoms or aroyl of up to 11 carbon atoms; and A is monohalo- or dihalophenyl wherein halo is F, Cl or Br.

15. An anti-inflammatory pharmaceutical composition, comprising an anti-inflammatorily effective amount per unit dosage of a compound of claim 1, in admixture with a pharmaceutically acceptable carrier.

16. A method of treating an animal afflicted with an inflammatory condition, comprising administering to the afflicted animal an anti-inflammatorily effective amount of a compound of claim 1, in admixture with a pharmaceutically acceptable carrier.

4,196,216
NOVEL BENZYLIDENE AMINI-OXYALKYL CARBOXYLIC ACIDS AND CARBOXYLIC ACID DERIVATIVES

Jan Van Dijk; Volkert Claassen, and Johannes M. A. Zwagemakers, all of Weesp, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 751,489, Dec. 17, 1976, Pat. No. 4,071,686, which is a continuation of Ser. No. 286,874, Sep. 7, 1972, abandoned, which is a continuation of Ser. No. 885,628, Dec. 16, 1969, abandoned. This application Nov. 2, 1977, Ser. No. 847,765

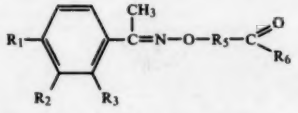
Claims priority, application Netherlands, Dec. 17, 1968, 6818074

Int. Cl.[2] A61K *31/24, 31/165, 31/15;* C07C *103/75*

U.S. Cl. 424—309 11 Claims

1. [(a-methyl-4-chlorobenzylidene amino)oxy] acethydrazide.

2. An anti-inflammatory composition comprising as an active ingredient a compound of the formula:



wherein

R_1 is a member selected from the group consisting of halogen, CF_3, CH_3, SO_2CH_3, SO_2NH_2 and hydrogen,

R_2 is a member selected from the group consisting of halogen, methyl and hydrogen with the proviso that R_2 is hydrogen only when R_1 is other than hydrogen,

R_3 is a member selected from the group consisting of hydrogen and halogen, with the proviso that R_3 is only halogen when R_2 is hydrogen,

R_5 is alkylene of up to 3 carbon atoms, R_6 is a member selected from the group consisting of OH, alkoxy of up to 8 carbon atoms, $NHNH_2$, NH_2, monoalkylamino of up to 3 carbon atoms, dialkylamino of up to 3 carbon atoms in each alkyl, benzyl oxy and the group consisting of the radical OR_7, where R_7 is a member selected from a metal atom, ammonium, hydroxy ethyl dimethyl ammonium and hydroxy ethyl diethyl ammonium in an anti-inflammatory effective amount and a finely divided pharmaceutical carrier therefor.

9. A method of alleviating inflammatory symptoms in a patient suffering therefrom, comprising administering to said patient a anti-inflammatory composition of claim 2 in a therapeutically effective amount.

4,196,217

HYDROXYLATED AMINES WITH BACTERIOSTATIC ACTIVITY

Alain Rancurel, Chartres, and Georges Grenier, Epernon, both of France, assignors to Laboratoires Pharmascience, Courbevoie, France

Continuation of Ser. No. 658,246, Feb. 17, 1976, abandoned. This application Jun. 15, 1978, Ser. No. 915,610

Int. Cl.[2] A61K *31/205, 31/21, 31/13, 31/14*

U.S. Cl. 424—316 5 Claims

1. A method of sterilizing instruments or apparatus and of antisepticizing humans and animals against gram negative bacteria comprising applying thereto, an effective amount of the compound of the formula

$$R—X—CH_2—CH(OH)—CH_2NH_2 \quad \text{(Formula I)}$$

wherein R represents a saturated or unsaturated straight chain C_5 to C_{18} aliphatic radical, and X represents O or S or the salts of these compounds.

4,196,218

INJECTABLE SOLUTIONS AND PROCESSES OF USING SUCH

Geraldine H. Thiele, New Oxford, Pa., assignor to Oxford Hill, Ltd., New Oxford, Pa.

Continuation of Ser. No. 724,943, Mar. 20, 1976, abandoned, which is a continuation of Ser. No. 483,010, Jun. 25, 1974, Pat. No. 3,982,017, which is a continuation-in-part of Ser. No. 369,236, Jun. 12, 1973, Pat. No. 3,924,000, which is a continuation-in-part of Ser. No. 123,830, Mar. 12, 1971, Pat. No. 3,767,812, Ser. No. 283,662, Aug. 25, 1972, Pat. No. 3,805,776, Ser. No. 283,663, Aug. 25, 1972, and Ser. No. 113,362, Feb. 8, 1971, said Ser. No. 283,662, and Ser. No. 283,663, each is a continuation-in-part of Ser. No. 123,830, Mar. 12, 1971, and Ser. No. 113,362, Feb. 8, 1971, said Ser. No. 123,830. This application Mar. 27, 1978, Ser. No. 890,239

The portion of the term of this patent subsequent to Jun. 26, 1990, has been disclaimed.

Int. Cl.[2] A61K *31/20, 31/045*

U.S. Cl. 424—318 10 Claims

1. The liquefied composition consisting essentially of an effective amount of a non-necrotic sclerosing fatty acid salt, an effective amount of ethyl alcohol, a buffering agent, and a water carrier, said salt prepared from an unsaturated fatty acid having one double bond and from an alkali metal or an alkaline earth metal or an alkali metal compound or an alkaline earth metal compound, and said liquefied composition having a pH between 9 and 11.

4,196,219

METHOD OF EXTENDING THE STORAGE LIFE IN THE FROZEN STATE OF PRECOOKED FOODS AND PRODUCT PRODUCED

Carol P. Shaw; John L. Secrist, both of Medfield, and Justin M. Tuomy, Framingham, all of Mass., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 9, 1978, Ser. No. 959,264

Int. Cl.[2] A23B *4/06, 4/10*

U.S. Cl. 426—89 5 Claims

1. A method of extending the storage life in the frozen state of a precooked food such as precooked meat, poultry, and fish which comprises the steps of cooking said food until its internal temperature is sufficiently high to permit eating of said food, coating the precooked food with a coating composition comprising the calcium salt of carrageenan, freezing said precooked food comprising said coating composition, and storing said precooked food comprising said coating composition in the frozen state.

5. A frozen, coated, precooked food comprising a frozen storage life-extending amount of a coating consisting essentially of the calcium salt of carrageenan, said amount of said coating on said frozen, coated, precooked food being from about 0.025 percent to about 0.5 percent by weight of the calcium salt of carrageenan based on the weight of the precooked food prior to application of said coating to said precooked food.

4,196,220

SMOKE COLORED FOOD CASING AND METHOD OF PRODUCING SAME BY USE OF LIQUID SMOKE AND AN ALBUMIN

Herman S. Chiu, and George E. Smith, both of Chicago, Ill., assignors to Union Carbide Corporation, New York, N.Y.

Filed May 9, 1978, Ser. No. 904,284

Int. Cl.[2] A22C *13/00;* A23L *1/232*

U.S. Cl. 426—105 51 Claims

1. A food casing comprising a casing having a coating over at least a portion of a surface thereof, said coating comprising an albumin and smoke flavoring and coloring constituents derived from a modified liquid smoke composition selected from the group consisting of:

(a) a substantially neutralized liquid smoke which comprises an aqueous composition having a pH greater than about 4, comprising a uniform mixture of smoke coloring and flavoring constituents derived from a liquid smoke solution, a salt of an alkaline neutralizing agent, and an amount of a water soluble alcohol solubilizing agent sufficient to prevent said smoke constituents from separating out;

(b) a concentrated liquid smoke which comprises an aqueous composition having a pH greater than about 4, comprising a uniform mixture of smoke coloring and flavoring constituents derived from a liquid smoke solution, and an amount of a water soluble alcohol solubilizing agent sufficient to prevent said smoke constituents from separating out, and wherein said composition comprises greater than about 15% by weight of said smoke constituents;

(c) a concentrated substantially neutralized liquid smoke which comprises an aqueous composition having a pH greater than about 4, comprising a uniform mixture of smoke coloring and flavoring constituents derived from a liquid smoke solution, a salt of an alkaline neutralizing agent, and an amount of a water soluble alcohol solubilizing agent sufficient to prevent said smoke constituents from separating out, and wherein said composition comprises greater than about 15% by weight of said smoke constituents; and

(d) a smoke tars liquid smoke which comprises a composition having a pH greater than about 4, comprising a uniform mixture of smoke coloring and flavoring constituents derived from smoke tars, and an amount of a water soluble alcohol solubilizing agent sufficient to prevent said smoke constituents from separating out, and wherein said composition comprises greater than about 15% by weight of said smoke constituents;

said casing being suitable for imparting smoke flavor and smear resistant intensified smoke color to the surface of a food product processed therein.

4,196,221

METHOD AND EQUIPMENT FOR PROCESSING FOOD PRODUCTS

Denise R. Dew, 7, rue Paul Barruel, 75015 Paris, France

Filed Jun. 6, 1978, Ser. No. 913,146

Claims priority, application France, Jun. 10, 1977, 77 17858; Apr. 12, 1978, 78 10721

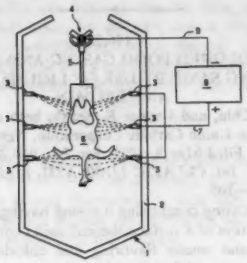
Int. Cl.[2] A22C *21/04*

U.S. Cl. 426—235 19 Claims

1. Method for processing of food product which comprises directly connecting one pole of an electrostatic generator to means for atomizing water; connecting the other pole of said generator to said food product via means for conveying or suspending said product; and spraying said food product with

atomized water from said means for atomizing water by electrostatic polarization of said atomized water.

11. Apparatus for spraying food product with water by electrostatic polarization of the water which comprises means



for atomizing said water, an electrostatic generator having one pole directly connected to said means for atomizing said water and having its other pole connected to said product via means for conveying or suspending said food product.

4,196,222

PROCESS FOR THE PREPARATION OF MEAT AND BACON ANALOGUES

Earl J. Cheney, Calgary, Canada, assignor to Burns Foods Limited of Calgary, Alberta Canada, Calgary, Canada

Continuation-in-part of Ser. No. 835,819. This application Oct. 21, 1977, Ser. No. 844,385

Int. Cl.[2] A23B *4/02*

U.S. Cl. 426—264 **32 Claims**

1. A process for producing bacon analogue and other multiphased meat products comprising:

(a) preparing a comminuted fat component of edible materials wherein at least one member or mixture thereof is a raw meat selected from the group consisting of pork, beef, lamb, poultry and vegetable protein;

(b) curing said fat component with a pickle cure composed of a salt solution including a bacteriostat and coloring agent until salt soluble proteins are removed to produce a salt soluble protein bind;

(c) preparing a comminuted lean meat component wherein at least one member or mixture thereof is a raw meat selected from the group consisting of pork, beef, lamb, poultry and vegetable protein; and

(d) extruding said fat component in the temperature range of about 40° F. to 55° F. and said lean component at a temperature sufficiently low to provide an extrudable mixture which maintains the integrity of a salt soluble protein bind while separately extruding said fat and lean components under pressure through pre-selected locations within a die to simulate the orientation of fat and lean components of a natural meat slab to produce a resultant meat slab.

4,196,223

METHOD OF PREPARING SAUSAGE CASINGS FROM PIG SKINS

Joseph L. Shank, Matteson, Ill., assignor to Wilson Foods Corporation, Oklahoma City, Okla.

Filed Jan. 23, 1978, Ser. No. 871,430

Int. Cl.[2] A22C *13/00*; A23L *1/31*

U.S. Cl. 426—268 **5 Claims**

1. A method of forming sausage casings from pig skins comprising the steps of:

(a) curing pig skins with dilute hydrochloric acid;

(b) grinding said cured skins;

(c) homogenizing said ground skins to a gel;

(d) extruding said gel into a coagulating and tanning bath comprising from about 0.5 to about 5.0 weight percent of glutaraldehyde in a saturated sodium chloride solution to obtain a coagulated and tanned casing; and then

(e) passing said casing into a plasticizing bath containing about 5% glycerol and about 0.5 to 3% of an oxidizing agent.

4,196,224

METHOD AND APPARATUS FOR HUSKING AND DRYING CEREAL AND LEGUME KERNELS

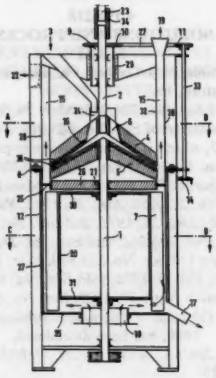
Otto Falk, Kremperheide, Fed. Rep. of Germany, assignor to Steinmetz-Patent-Mullerei KG, Krempe, Fed. Rep. of Germany

Filed Jul. 20, 1977, Ser. No. 817,885

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1976, 2633275

Int. Cl.[2] A23L *1/10*; A23N *5/00*

U.S. Cl. 426—483 **1 Claim**



1. In a method for husking and drying cereal and legume kernels in a generally drum-shaped machine having co-axial truncated upper and lower plate bodies with a spacing between the plate bodies which is smaller at the edges than in the center, the improvement comprising the steps of:

(a) feeding the kernels into a kernel receiving cylinder arranged above the peak of the upper blade body;

(b) rotating the plate bodies at different rates of revolution;

(c) introducing the kernels at the center of the plate bodies;

(d) generating compressed air in the spacing between the plate bodies;

(e) separating the husks from the kernels by rolling off the pericarp from the kernels as a result of the kernels being engaged between the plate bodies, which rotate at different rates of revolution;

(f) blowing the mixture of husks and kernels, after they have been separated from the space between the plate bodies, into an annular chute surrounding the plate bodies;

(g) discharging the husks, which are lighter than the kernels, upwardly through said annular chute;

(h) polishing and classifying the kernels during passage through said annular chute;

(i) allowing the kernels to drop into a lower annular space to be impacted by propelling vanes mounted on a drum rotating with said lower plate body, causing the kernels to follow a spiral path in said lower annular space;

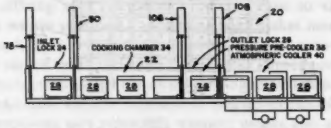
(j) detaching from the kernels loose husk particles by allowing the kernels to penetrate elastic material on the inside of said lower annular space;

(k) and sucking in air from below said lower annular space.

4,196,225
CONTINUOUS PRESSURE COOKER AND COOLER WITH CONTROLLED LIQUID FLOW

Samuel A. Mencacci, San Jose, Calif., assignor to FMC Corporation, San Jose, Calif.

Division of Ser. No. 781,405, is a continuation-in-part of Ser. No. 767,277, Feb. 10, 1977, abandoned. This application Apr. 18, 1978, Ser. No. 897,475
Int. Cl.[2] A23C *3/00*
U.S. Cl. 426—523 12 Claims



1. A continuous method of cooking and cooling product filled containers as they are moved through a pressure vessel comprising the steps of: positioning groups of containers within liquid tight processing vessels having open overflow edges near their upper ends; directing high pressure air into said pressure vessel for maintaining the vessel under superatmospheric pressure; filling the processing vessels to overflowing with a heat treatment liquid for completely submerging all containers in the processing vessel; moving the filled processing vessels from the outer atmosphere, through the pressure vessel and back to the outer atmosphere while maintaining said superatmospheric pressure in said pressure vessel; heating a portion of the heat treatment liquid to a cooking temperature of the food in the containers; circulating the heated liquid through said processing vessels at a controlled rate past the associated containers and then causing the heated liquid to overflow from the processing vessels for collection in a low volume pool; reheating and recirculating the heated liquid from the low volume pool through the processing vessels as the processing vessels are advanced through a portion of the pressure vessel and until the product is cooked; maintaining the upper surface of the pool at a level below the containers in the processing vessels; and thereafter circulating a container cooling heat treatment liquid past the associated containers as the processing vessels are advanced through the remaining portion of the pressure vessel and into the outer atmosphere.

4,196,226
ALKALI METAL ALUMINUM PHOSPHATE

Robert E. Benjamin, and Thomas E. Edging, both of Nashville, Tenn., assignors to Stauffer Chemical Company, Westport, Conn.

Continuation of Ser. No. 703,872, Jul. 9, 1976, abandoned. This application Apr. 24, 1978, Ser. No. 899,445
Int. Cl.[2] A21D *2/02*
U.S. Cl. 426—551 27 Claims

1. A process for preparing an alkali metal or ammonium aluminum phosphate composition useful in a leavening system which comprises:

(a) contacting a slurry of an alkali metal or ammonium aluminum phosphate with a calcium compound which does not interfere with the leavening system, said slurry having an excess of phosphoric acid above the amount needed to form said phosphate and wherein at least a portion of said acid is neutralized by said calcium compound, and

(b) granulating the product of step (a) while drying under such conditions that a majority of the granulated particles when dried are less than about 840 microns, and at least 90% are less than 2000 microns, said granulated particles of said phosphate having a calcium containing outer surface.

4,196,227
METHOD OF FORMING CARBON ANODES IN MULTIDIGIT FLUORESCENT DISPLAY DEVICES

Richard DuBois, North Caldwell, and Donald M. Ashton, Jr., Glen Ridge, both of N.J., assignors to Wagner Electric Corporation, Parsippany, N.J.

Filed Apr. 20, 1978, Ser. No. 898,305
Int. Cl.[2] B05D *5/06*
U.S. Cl. 427—67 10 Claims

1. A process for forming an electrode pattern in a fluorescent display device of the type wherein said electrode pattern is deposited on a substrate, wherein the improvement comprises:

(a) mixing from about 1 to about 33 parts of organic silicate with 100 parts of finely divided carbon to form an emulsion;

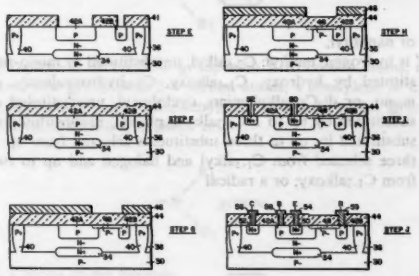
(b) silk screening said emulsion onto said substrate; and

(c) baking said emulsion.

4,196,228
FABRICATION OF HIGH RESISTIVITY SEMICONDUCTOR RESISTORS BY ION IMPLANATATION

Ury Priel, Cupertino; Jerry D. Gray, San Jose, and Allen H. Frederick, Pacifica, all of Calif., assignors to Monolithic Memories, Inc., Sunnyvale, Calif.

Division of Ser. No. 805,534, Jun. 10, 1978, Pat. No. 4,152,627. This application Jul. 21, 1978, Ser. No. 926,626
Int. Cl.[2] H01L *21/425, 21/441*
U.S. Cl. 427—88 4 Claims



1. A method for making a high resistivity semiconductor resistor device displaying stable resistivity characteristics during processing steps subsequent to the formation of said high resistivity semiconductor resistor comprising the steps of:

forming a thin insulating layer on a surface of a semiconductor substrate;

forming spaced resistor contact regions into a surface portion of said semiconductor substrate;

forming a shallow, stable high resistivity region of the same conductivity as said spaced resistor contact regions by implanting ions through said thin insulating layer into a surface portion of said semiconductor to provide a high resistivity conduction path between said spaced resistor contact regions; and

forming electrical contacts to said spaced resistor contact regions.

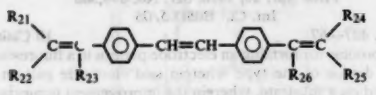
4,196,229
SUBSTITUTED DIVINYL STILBENES AS OPTICAL BRIGHTENERS

Fritz Fleck, Bottmingen, and Juerg Heller, Allschwil, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Division of Ser. No. 653,506, Jan. 29, 1976, Pat. No. 4,108,887. This application Jun. 12, 1978, Ser. No. 914,403
Int. Cl.[2] C09K *11/06*
U.S. Cl. 427—158 15 Claims

1. A process for optically brightening a synthetic or semi-

synthetic high molecular weight organic material which comprises applying thereto an effective amount of a compound of the formula:



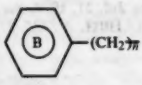
1"

in which

R_{21} and R_{24}, independently, are C_{2-4}alkenyl, —CN, —CONR'R'', —COOR''', Rx—SO_2— or Rx—CO—,

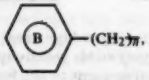
R_{22}, R_{23}, R_{25} and R_{26}, independently, are hydrogen or unsubstituted C_{1-4}alkyl,

Rx signifies methyl; C_{2-6}alkyl, unsubstituted or mono-substituted by C_{1-4}alkoxy or C_{1-4}alkoxy-C_{2-6}alkoxy; phenyl, unsubstituted or substituted by up to three substituents selected from up to three selected from C_{1-3}alkyl and halogen and up to two from C_{1-3}-alkoxy; a radical



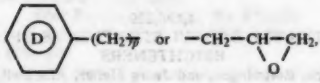
or naphthyl,

R' is hydrogen; methyl; C_{2-6}alkyl, unsubstituted or mono-substituted by hydroxy, C_{1-4}alkoxy, C_{2-6}hydroxyalkoxy, or mono -or di-C_{1-4}alkylamino; cyclohexyl, unsubstituted or substituted by up to 3 C_{1-2}alkyls; phenyl, unsubstituted or substituted by up to three substituents selected from up to three selected from C_{1-3}alkyl and halogen and up to two from C_{1-3}alkoxy; or a radical



R'' is hydrogen; methyl; C_{2-6}alkyl, unsubstituted or mono-substituted by hydroxy, C_{1-4}alkoxy or C_{2-6}hydroxyalkoxy,

R''' is M; methyl; C_{2-6}alkyl, unsubstituted or mono-substituted by hydroxy, C_{1-4}alkoxy, C_{1-4}alkoxy-C_{2-6}-alkoxy or C_{2-6}hydroxyalkoxy; cyclohexyl, unsubstituted or substituted by up to 3 C_{1-2}alkyls; phenyl, unsubstituted or substituted by up to three substituents selected from up to three selected from C_{1-3}alkyl and halogen and up to two from C_{1-3}-alkoxy; or a radical



n and p, independently, are 1 or 2,

M is hydrogen or a non-chromophoric cation, and

rings B and D, independently, are unsubstituted or substituted by up to three substituents selected from up to two from C_{1-3}alkyl and up to two from halogen.

4,196,230

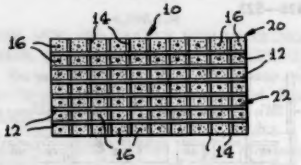
PRODUCTION OF CARBON FIBER-TANTALUM CARBIDE COMPOSITES

James O. Gibson, and Mark G. Gibson, both of 871 El Oro Ln., Pacific Palisades, Calif. 90272

Filed Sep. 15, 1978, Ser. No. 942,485

Int. Cl.[2] B05D *3/02*

U.S. Cl. 427—228 **30 Claims**



1. A process for producing a fiber-reinforced tantalum carbide composite which comprises the steps:

(a) infiltrating a multidirectional carbon fiber preform with an aqueous solution of tantalum fluoride and a sugar,

(b) introducing anhydrous ammonia into said solution and forming tantalum pentoxide and ammonium fluoride,

(c) removing said ammonium fluoride by heating and vacuum sublimation, and

(d) heating the resulting infiltrated preform containing tantalum pentoxide and said sugar at elevated temperature and converting said sugar to carbon and reacting said carbon with said tantalum pentoxide to form tantalum carbide.

4,196,231

IMPREGNATING EQUIPMENT AND METHOD OF VACUUM IMPREGNATION

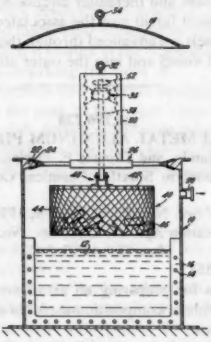
Ernst Hübers, Hahnenpatt 15, 4290 Bocholt, Fed. Rep. of Germany

Filed Aug. 23, 1978, Ser. No. 936,059

Claims priority, application Fed. Rep. of Germany, Aug. 23, 1977, 2737917

Int. Cl.[2] B05D *3/12*

U.S. Cl. 427—240 **27 Claims**



1. Apparatus for impregnating articles comprising a tank having an upper rim, means for evacuating said tank, means for introducing an impregnating liquid into said tank, basket means for retaining said articles, centrifuge means including self-aligning bearing means for rotating said basket means, and support means for releasably affixing said self-aligning bearing means to said upper rim of said tank so that when said support means is affixed to said upper rim of said tank, said basket means is rotatable within said tank, and when said support means is released from said upper rim of said tank said basket means can be removed from said tank.

25. A method of impregnating articles in a centrifugal basket means disposable within a tank havng an upper rim, said centrifugal basket including releasable support means for releasably suspending said basket means from said upper rim of said tank, said method comprising disposing said articles in said basket means, attaching said basket means to said releasable support means, introducing said basket means and said releasable support means into said tank, releasing said releasable support means from said basket means so that said basket means remains in said tank, introducing an impregnating liquid into said tank, closing and evacuating said tank so as to impregnate said articles with said impregnating liquid, opening said tank, affixing said releasable support means to said basket means within said tank, suspending said basket means within said tank by affixing said releasable support means to said upper rim of said tank, centrifuging said impregnated articles by rotating said basket means suspending in said tank, releasing said releasable support means from said upper rim of said tank, and removing said releasable support means and said basket means from said tank.

4,196,232
METHOD OF CHEMICALLY VAPOR-DEPOSITING A LOW-STRESS GLASS LAYER

George L. Schnable, Lansdale, Pa., and Albert W. Fisher, Ringoes, N.J., assignors to RCA Corporation, New York, N.Y.

Filed Dec. 18, 1975, Ser. No. 642,141
Int. Cl.[2] C23D 5/10; C23C 13/04; C01B 33/12
U.S. Cl. 527—255.3 16 Claims

15. A method of chemically vapor depositing a glass layer onto a surface of a substrate comprising heating said substrate while contacting said surface with a vaporous mixture comprising silane, oxygen, and water vapor, said water vapor being present in an amount substantially above that normally present therein from the oxidation of said silane, whereby the tensile stress of said deposited glass layer is reduced.

4,196,233
PROCESS FOR COATING INORGANIC SUBSTRATES WITH CARBIDES, NITRIDES AND/OR CARBONITRIDES

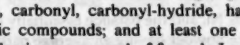
Diethelm Bitzer, Putzbrunn near Munich, Fed. Rep. of Germany, and Dieter Lohmann, Pratteln, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 547,286, Feb. 5, 1975, abandoned. This application Jul. 6, 1977, Ser. No. 813,364
Claims priority, application Switzerland, Feb. 7, 1974, 001703/74; Feb. 7, 1974, 001704/74
Int. Cl.[2] C23C 11/08, 11/14
U.S. Cl. 427—249 15 Claims

1. A process for producing on an inorganic substrate a coating of material selected from the group consisting of an element carbide, nitride and carbonitride, said element selected from the group consisting of iron, boron, silicon and the transition metals of sub-groups 4 to 6 of the periodic table, which comprises

heating said substrate to a temperature of at least 500° C., and

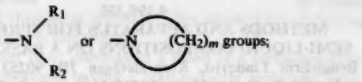
contacting said substrate with a gaseous or vaporous reactant stream comprising a mixture of hydrogen; a derivative of said element selected from the group consisting of its hydride, carbonyl, carbonyl-hydride, halide and organometallic compounds; and at least one carbon- and nitrogen-releasing compound of formula I or II



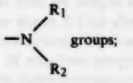
(I) (II)

wherein X represents

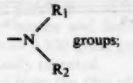
an alkyl group with 1–6 carbon atoms; said alkyl group substituted by halogen atoms,



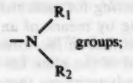
an alkenyl group with 2–4 carbon atoms; said alkenyl group substituted by halogen atoms or



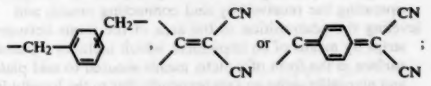
a cycloalkyl group with 3–6 atoms or an aryl group with 6–10 carbon atoms; said cycloalkyl group or said aryl group substituted by halogen atoms, methyl groups or



X_1 represents an alkylene group with 1–10 carbon atoms; an alkenylene group with 2–4 carbon atoms; a phenylene or cyclohexylene group; said phenylene or cyclohexylene group substituted by halogen atoms or



or a group of the formula



and R_1 and R_2 independently of one another denote hydrogen or an alkyl group with 1–4 carbon atoms, and m denotes an integer from 4 to 7; permitting reaction thereof to form said coating on said substrate.

4,196,234
METHOD OF MANUFACTURING SULFUR-COATED BAMBOO REINFORCEMENT MEMBER FOR CONCRETE ARTICLES

Hsai-Yang Fang, 1847 Markham Dr., Bethlehem, Pa. 18017, and Harshavardhan C. Mehta, 37-A Southern Ave., Calcutta, 700029, India

Division of Ser. No. 784,686, Apr. 5, 1977, Pat. No. 4,137,685. This application Dec. 5, 1978, Ser. No. 966,742
Int. Cl.[2] B05D 7/06
U.S. Cl. 427—291 1 Claim

1. A method for producing a moisture resistant non-swelling bamboo rod reinforcement member for concrete bodies comprising:

(a) drying said bamboo rod;

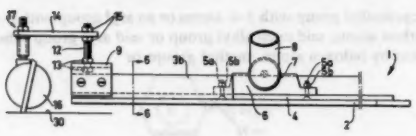
(b) roughening a surface of said bamboo rod by removing the waxy cuticle of epidermis to expose the cortex;
(c) hot dipping said bamboo rod in a bath of molten sulfur at a temperature between 238° F. and 300° F., and
(d) drying said hot-dipped bamboo rod to form a substantially continuous coating of crystallized sulfur contacting and adhering to said cortex of said bamboo rod to prevent moisture absorption and swelling.

4,196,235

METHODS AND APPARATUS FOR SPREADING SEMI-LIQUID COMPOSITIONS ON A BASE SURFACE

Bengt-Erik Lindqvist, Korpralsvägen 7B, 90253 Umeå, and Harald K. Spetz, Floda, 91039 Botsmark, both of Sweden (91039)

Filed Sep. 12, 1977, Ser. No. 832,282
Int. Cl.² B05D *3/12*
U.S. Cl. 427—356 **3 Claims**



1. A method of spreading a pattern of juxtaposed strips of a semi-liquid plastic composition to form a layer of uniform thickness on a base surface comprising the steps of feeding out the composition as a string for each strip;
spreading said string by means of an implement which includes a planar surface in the form of a plate, means attached to one end of the plate for abutment against said base surface and advancement therealong, means secured to said plate and pivotable about an axis perpendicular to the longitudinal dimension of said plate for connecting an elongated operating bar to said plate, and an elongated operating bar received by said connecting means; and
leveling the composition in the area of the joints between strips by means of an implement which includes a planar surface in the form of a plate, means secured to said plate and pivotable about an axis perpendicular to the longitudinal dimension of said plate for connecting an elongated operating bar to said plate, and an elongated operating bar received by said connecting means.

4,196,236

FABRICATION MULTIPHASE PLASTICS FROM LIQUID SUSPENSION

Robert D. Lundberg, Somerville, and Henry S. Makowski, Scotch Plains, both of N.J.

Continuation of Ser. No. 705,466, Jul. 15, 1916, abandoned, which is a division of Ser. No. 610,826, Sep. 5, 1975, abandoned, which is a division of Ser. No. 429,162, Dec. 28, 1973, Pat. No. 3,925,280, which is a division of Ser. No. 229,487, Feb. 25, 1972, abandoned. This application Jan. 27, 1978, Ser. No. 873,014
The portion of the term of this patent subsequent to Oct. 11, 1994, has been disclaimed.
Int. Cl.² B05D *3/02*
U.S. Cl. 427—374 B **8 Claims**

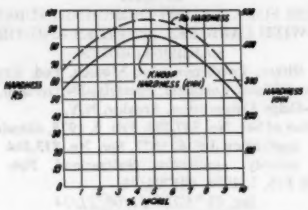
1. A process for fabricating an article from a thermoplastic composition, said thermoplastic composition being a thermoplastic ionomer, that is, a polymer having a backbone composed of a thermoplastic resin and having polar groups pendant to that backbone, which comprises the steps of:
(a) suspending said thermoplastic composition in finely divided form in a liquid medium in such amount that solids content of the resulting suspension is in the range of from about 15 to about 75 wt. %; said liquid medium being nonvolatile and being capable of plasticizing the backbone near or above the softening point of that backbone;
(b) applying said suspension to a surface;
(c) heating said surface to a temperature at least approximately equal to that of the softening point of said backbone;
(d) cooling said heated surface to a temperature below that of the softening point of said backbone to form said article in a gelled state; and
(e) heating at a later time said article in said gelled state to a temperature of about equal to that of the higher softening point of said thermoplastic ionomer to cause curing of said article.

4,196,237

HIGH HARDNESS COPPER-ALUMINUM ALLOY FLAME SPRAY POWDER

Mahesh S. Patel, Albertson, and Joseph F. Quaas, Island Park, both of N.Y., assignors to Eutectic Corporation, Flushing, N.Y.

Division of Ser. No. 706,253, Jul. 19, 1976, abandoned. This application Nov. 7, 1977, Ser. No. 849,263
Int. Cl.² B05D *1/08*
U.S. Cl. 427—419.1 **1 Claim**



1. A flame spray method of producing an aluminum bronze alloy as-sprayed coating on a metal substrate, said coating characterized by improved hardness and resistance to oxidation and resistance to galling which comprises,
spraying a preliminary coating of a bonding metal on said metal substrate,
and then spraying said aluminum bronze alloy as an atomized free flowing powder on said bonding metal coating, said atomized aluminum bronze alloy powder consisting essentially of up to about 3% Fe, about 6% to 12% Al, about
4% to 6% Ni, and the balance essentially copper, said free flowing powder having an average particle size ranging substantially from about minus 100 mesh to plus 325 mesh,
whereby a hard adherent coating of said aluminum bronze alloy is provided on said metal substrate of hardness at least 10% higher than the hardness of the as-sprayed alloy without nickel.

4,196,238

STRAND COVERED DECORATIVE ORNAMENT WITH PRINTED DESIGN

Anne L. Wiggins, Belmont, N.C., assignor to Rauch Industries, Inc., Gastonia, N.C.

Filed Feb. 17, 1976, Ser. No. 658,774
Int. Cl.[2] A47G 33/08
U.S. Cl. 428—11 7 Claims

1. A decorative ornament comprising a three dimensional core having a smooth outer surface, strand material being spirally wound about the smooth exterior surface of said core in individual windings disposed in side-by-side relationship and providing a smooth outer covering for said core, and at least one printed design on and contrasting with said outer covering of said core, said printed design spanning a substantial number of said individual windings of strand material and serving to stabilize said windings on said core to assist in preventing fraying, separation or loosening of the windings as well as providing additional decorative ornamentation for the ornament.

4,196,239

PLANT-LIKE CHEMICAL GROWTHS AND APPARATUS TO DISPLAY SAME

George M. Sawyer, 7251 Garden Grove Blvd., #E, Garden Grove, Calif. 92641

Filed Jul. 24, 1978, Ser. No. 927,144
Int. Cl.[2] A47G 33/06
U.S. Cl. 428—17 12 Claims

1. In means that display plant-like chemical growths,
(a) said means having a lower portion to contact a solution capable of forming said growths when the solution is dried,
(b) said means having an intermediate wick portion to feed said solution upwardly by wicking action,
(c) said means having projecting tips to which said solution from said intermediate portion is fed to form said growths when the solution fed to said tips is dried, and
(d) dyes locally impregnating areas of said means in such proximity to the tips as to color the solution fed by said wicking action to the tips and to color said growths.

4,196,240

HEAT SHRINKABLE MULTILAYER PACKAGING FILM OF BLENDED COPOLYMERS AND ELASTOMERS

Stanley Lustig, Park Forest; Stephen J. Vicik, Darien, and William J. Kohler, Westmont, all of Ill., assignors to Union Carbide Corporation, New York, N.Y.

Filed Jan. 18, 1978, Ser. No. 870,598
Int. Cl.[2] B65D 33/00, 33/04; B32B 27/08
U.S. Cl. 428—35 22 Claims

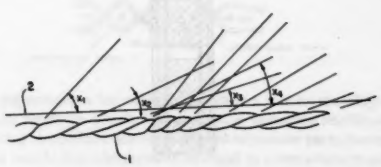
1. A heat-shrinkable multilayer film adapted for packaging of frozen poultry, comprising:
a first outer layer comprising a blend of a propylene-ethylene copolymer having a high isotactic molecular structure, containing up to about 6% by weight ethylene, and having a melt flow of from about 1.5 to about 18 decigrams per minute; a (butene-1)-ethylene copolymer having a high isotactic molecular structure, containing from about 1% to about 10% by weight ethylene, and having a melt flow of from about 0.1 to about 5.0 decigrams per minute; and a thermoplastic elastomer selected from the group consisting of ethylene-propylene copolymers and ethylene propylene diene terpolymers, the ratio by weight of said propylene-ethylene copolymer to said (butene-1)-ethylene copolymer being from about 2:1 to about 1:2 and said thermoplastic elastomer being present from about 10% by weight to about 50% by weight; and
a second outer layer comprising an ethylene-(butene-1) copolymer having a melt flow of from about 0.1 to about 1.0 decigram per minute and having a density of from about 0.916 to about 0.920 gram per cubic centimeter;
said film being biaxially oriented.
20. A bag fabricated from the film of claim 1.

4,196,241

INTERTWINED CARPET YARN OF VARYING DYE AFFINITY AND CARPETS MADE FROM SAID YARN

Willem C. van Anholt, Arnhem, and Antonie De Geus, PC Velp, both of Netherlands, assignors to Akzona Incorporated, Asheville, N.C.

Filed Jan. 9, 1979, Ser. No. 2,120
Claims priority, application Netherlands, Oct. 1, 1978, 7800277
Int. Cl.[2] D02G 3/00
U.S. Cl. 428—92 7 Claims



1. A composite synthetic multifilament carpet yarn, comprising at least two intertwined outside groups of differentially colorable crimped basic yarns, the composite yarns having a denier of 3000 to 50,000 dtex, a crimp contraction of less than about 20%, a number of crimp waves per cm of less than about 6, a hairiness of about at least 200 when measured over a length of 5 meters at a distance of 1.0 mm from the compact yarn body, a varying twist angle averaging from between about 10° to 60° whereby the dimensions of the twist angles X, measured in degrees, comply with a frequency distribution Y, according to the formula:

$$Y = Y_0(X - X_{min})^{m1} \cdot (1 - \frac{X - X_{min}}{X_{max} - X_{min}})^{m2}$$

in which:

$$0° \leqq X_{min} \leqq 10° \quad -0.3 \leqq m_1 \leqq 10$$
$$20° \leqq X_{max} \leqq 80° \quad 1 \leqq m_2 \leqq 10$$

said first outside group having less pronounced differences in color and said second outside group having relatively more sharply deviating color differences, the length of the differences a in millimeters as seen from one side of the yarn surface having a frequency distribution b expressed according to the formula:

$$b - b_0(a - a_{min})^{m1} \cdot (1 - \frac{a - a_{min}}{a_{max} - a_{min}})^{m2}$$

wherein:

$$0 \leqq a_{min} \leqq 10\text{mm} \quad -0.3 \leqq m_1 \leqq 10$$
$$20 \leqq a_{max} \leqq 30\text{mm} \quad 1 \leqq m_2 \leqq 10$$

and the distance p in millimeters between the color differences having a frequency distribution q expressed according to the formula:

$$q - q_0(p - p_{min})^{m1} \cdot (1 - \frac{p - p_{min}}{p_{max} - p_{min}})^{m2}$$

wherein:

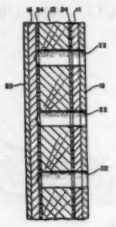
$$0 \leqq p_{min} \leqq 15\text{mm} \quad -0.3 \leqq m_1 \leqq 10$$
$$25 \leqq p_{max} \leqq 300\text{mm} \quad 1 \leqq m_2 \leqq 10$$

4,196,242

FLAME RETARDANT PLYWOOD PANEL

John C. McLaren, 3177 Westhaven Dr., Anaheim, Calif. 92804

Filed Nov. 28, 1977, Ser. No. 855,494
Int. Cl.[2] B32B *3/24*
U.S. Cl. 428—138 **23 Claims**



1. A flame-retardant wall panel, comprising:

a perforated structural core layer having front and back faces;

a first veneer layer attached by a first adhesive coating layer to said back face, said first veneer layer having perforations communicating with said perforations in said core layer;

a second veneer layer attached by a second adhesive coating layer to said front face, said second coating layer having perforations communicating with said perforations in said core layer; and

flame-proofing means applied to said first and second veneer layers for preventing a flame from igniting said first and second veneer layers and said core layer, while allowing heat from said flame to pass through said flame-proofing means to char said core layer and said first and second veneer layers, said flame-proofing means comprising:

an unfired ceramic backing layer applied to said first veneer layer, said backing layer having perforations in communication with said perforations in said core layer; and

an unfired ceramic fronting layer applied to said second veneer layer.

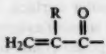
4,196,243

NON-SKID FLOOR COVERING

Peter R. Sachs, New Windsor, and George Thomas, Newburgh, both of N.Y., assignors to GAF Corporation, New York, N.Y.

Filed Sep. 29, 1978, Ser. No. 946,941
Int. Cl.[2] D06N *7/04;* **B32B** *27/40*
U.S. Cl. 428—147 **7 Claims**

1. Non-skid floor covering having a plastics wear layer over a vinyl substrate, said wear layer comprising urethane compound photopolymerized by exposure to ultraviolet light from a fluid coating composition comprising urethane compound having at least two photopolymerizable ethylenically unsaturated groups of the general formula:

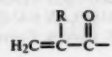


where R is either H or CH_3 and said wear layer having uniformly dispersed therein between about 20 and about 40 wt% based on total wear layer of particulate plastics material in the size range between about 200 mesh and about 1/16 inch, said plastics material having a hardness of not more than Rockwell M-100 and a Taber abrasion weight loss of not more than about 75 mg per 1000 cycles using CS-17 wheels and 1000 gram weights and the surface of the wear layer having a height variation of at least about 5 mils due to the presence of the particulate material.

4. Process for making non-skid floor covering comprising:

(a) first forming a vinyl substrate;

(b) then coating said substrate with fluid wear layer coating, said coating comprising urethane compound having at least two photopolymerizable ehtylenically unsaturated groups of the general formula:



where R is either H or CH_3, said wear layer coating having slurried therein between about 20 and about 40 wt% based on total coating of particulate plastics material in the size range between about 200 mesh and about 1/16 inch, said plastics material having a hardness not more than about Rockwell M-100 and a Taber abrasion weight loss of not more than about 75 mg per 1000 cycles using CS-17 wheels and 1000 gram weights; and

(c) then curing said coating to form a cured wear layer having a height variation of at least about 5 mils due to the presence of the particulate material.

4,196,244

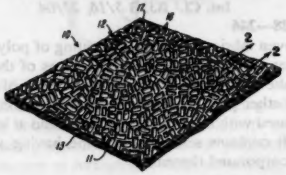
WALL COVERING AND METHOD OF MAKING SAME

Charles A. Roman, Lake Hopatcong, N.J., assignor to Dayco Corporation, Dayton, Ohio

Filed Mar. 31, 1978, Ser. No. 892,053
Int. Cl.[2] B32B *3/30*
U.S. Cl. 428—159 **7 Claims**

1. A lightweight wall covering having a weight of less than 14 ounces per square yard and having a substantially smooth inside surface and a deep textured outer layer comprising, a substrate having an exposed surface defining said inside surface, a fluid impervious film bonded against said substrate, and an embossed expanded vinyl plastisol bonded against said film and defining said textured outer layer, said textured outer layer

being defined by alternating recesses and dense projections substantially free of air spaces said air spaces constituting less than 10 percent of the volume of said outer layer, said textured outer layer having a substantially fluid impervious skin, said substrate and film having a combined thickness of a particular



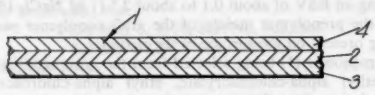
amount of roughly 10 mils and less, and the outermost surfaces of said projections having a maximum thickness measured from the interface of said textured outer layer with said film which is within the range of roughly 3 to 12 times said particular amount and defines said deep texture in said outer layer.

4,196,245

COMPOSITE NONWOVEN FABRIC COMPRISING ADJACENT MICROFINE FIBERS IN LAYERS

Richard P. Kitson, Germantown; Richard L. Gilbert, Jr., and Joseph Israel, both of Memphis, all of Tenn., assignors to Buckeye Cellulos Corporation, Memphis, Tenn.

Filed Jun. 16, 1978, Ser. No. 915,913
Int. Cl.[2] B32B *7/14*
U.S. Cl. 428—198 **36 Claims**



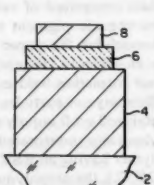
1. A composite nonwoven fabric comprising at least two adjacent hydrophobic plies of microfine fibers having a fiber diameter of up to 10 microns, each of said microfine fiber plies having a basis weight of at least about 10 g/m^2 and an initial density of up to about 0.15 g/cc, and one air permeable, nonwoven cover ply.

4,196,246

ANTI-REFLECTION FILM FOR SYNTHETIC RESIN BASE

Hidetaka Takayama, Chiba, and Hideo Ikeda, Kamakura, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Jun. 22, 1977, Ser. No. 809,102
Claims priority, application Japan, Jun. 23, 1976, 51-73104; Feb. 25, 1977, 52-19171
Int. Cl.[2] B32B *27/06;* G02B *1/10*
U.S. Cl. 428—213 **16 Claims**



1. Anti-reflection film on a synthetic resin base comprising:
a first layer selected from the group consisting of silicon dioxide (SiO_2) and a mixture of silicon dioxide (SiO_2) and alumina (Al_2O_3) deposited on said synthetic resin base by evaporation, said first layer having a geometrical film thickness of 1 to 5μ;
a second layer formed of alumina (Al_2O_3) deposited on said first layer by evaporation, said second layer having an optical film thickness of λ/4; and
a third layer selected from the group consisting of silicon dioxide (SiO_2) and magnesium fluoride (MgF_2) deposited on said second layer by evaporation, said third layer having an optical film thickness λ/4.

4,196,247

PACKAGING MATERIAL HAVING NON-BLOCKING COATING

Dale C. Wiesman, Neenah, Wis., assignor to American Can Company, Greenwich, Conn.

Filed Apr. 17, 1978, Ser. No. 897,008
Int. Cl.[2] B32B *7/02, 9/04;* B65D *85/72*
U.S. Cl. 428—216 **10 Claims**

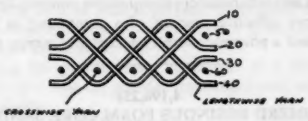
1. A heat sealable packaging material comprising:
(a) a substrate of flexible packaging material which is not affected by temperatures used to provide wax composition heat seals;
(b) a layer of normally tacky heat sealable wax composition coated on a surface of said substrate;
(c) a non-blocking solidified hot melt coating on said heat sealable wax composition at a thickness between 1 and 14 pounds per ream, said non-blocking coating comprising a petroleum wax composition having a melting point between approximately 155° F. and 210° F.

4,196,248

FELT HAVING REINFORCED CROSSWISE YARNS

William H. Dutt, Defreestville, N.Y., assignor to Albany International Corp., Albany, N.Y.

Continuation of Ser. No. 405,982, Oct. 12, 1973, abandoned, which is a continuation of Ser. No. 628,628, Apr. 5, 1976, abandoned. This application Sep. 9, 1974, Ser. No. 504,356
Int. Cl.[2] B32B *7/00*
U.S. Cl. 428—225 **10 Claims**



1. A papermakers felt which comprises a woven multilayer, single-ply fabric in which first crosswise yarns are reinforced by twisting in combination with second crosswise yarns having superior tensile and compressive strength in comparison to said first crosswise yarns and in which the crosswise yarns are displaced from the neutral axis of said fabric by lengthwise yarns common to each layer and means for securing the crosswise and lengthwise yarns against relative movement.

4,196,249

SELF LUBRICATING BALL JOINT LINER CHARACTERIZED BY A SURFACE COMPRISING HARD METAL PARTICLES

Mihai D. Patrichi, Los Angeles, Calif., assignor to Networks Electronic Corp., Chatsworth, Calif.

Filed Jan. 9, 1978, Ser. No. 868,196
Int. Cl.[2] B32B *5/28, 5/30, 15/02;* F16C *33/24*
U.S. Cl. 428—242 **10 Claims**

1. A low friction bearing liner of high wear life, comprising:
a backing member comprising woven fabric of high tensile and compressive strength;

a body of plastic material permeating said fabric, said plastic material comprising:

a minor percentage of powdered, very hard material in a coating providing the wear surface of said material;

a higher percentage of powdered tetrafluoroethylene embodied in said coating;

and a major proportion of binder material intimately mixed with said powdered materials;

said wear surface coating having a self-lubricating, highly glossy, smooth finish.

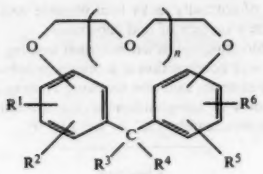
2. A bearing liner as defined in claim 1, wherein said hard material is selected from the group including tungsten, tungsten alloys, and titanium oxide.

4,196,250
POLYETHER DERIVATIVES

Rudiger D. Haugwitz, Titusville, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Feb. 16, 1979, Ser. No. 12,621
Int. Cl.[2] A61K *31/335*; C07D *319/08*
U.S. Cl. 424—278 11 Claims

1. A compound of the structure



wherein R^1, R^2, R^5 and R^6 are the same or different and are hydrogen, halogen, nitro, lower alkyl or cyano, R^3 and R^4 are the same or different and are hydrogen or halogen or R^3 and R^4 together represent oxygen, and n is an integer from 1 to 5.

8. An anti-coccidial composition useful for treating coccidial infections in poultry comprising an anti-coccidial effective amount of a compound as defined in claim 1 and a pharmaceutically acceptable carrier therefor.

10. An anti-inflammatory composition comprising an anti-inflammatory effective amount of a compound as defined in claim 1 and a pharmaceutically acceptable carrier therefor.

4,196,251
RIGIDIZED RESINOUS FOAM CORE SANDWICH STRUCTURE

Leo J. Windecker, Midland, Tex., assignor to International Harvester Company, Chicago, Ill.

Filed Apr. 16, 1979, Ser. No. 30,209
Int. Cl.[2] B32B *3/26*
U.S. Cl. 428—311 27 Claims

20. A reinforced rigidized resinous foam core sandwich structure comprising an open-celled flxible foam sheet, a thin plyable sheet contiguous each of the opposite longitudinal faces of said flexible foam sheet, a plurality of high tensile strength fiber segments passing through said flexible foam sheet with the end portions of said fiber segments extending beyond said opposite longitudinal faces, the cells of said flexible foam sheet being impregnated with a settable resin and curing agent therefor, and said end portions of said fiber segments being bonded to said thin plyable sheets.

4,196,252
COATED FABRIC BELT

John M. Sawyer, Cuyahoga Falls, and John R. Harris, Uniontown, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Mar. 21, 1979, Ser. No. 22,573
Int. Cl.[2] B32B *5/16, 27/04*
U.S. Cl. 428—246 3 Claims

1. A woven fabric belt having a coating of polyurethane on each face and extending through interstices of the fabric, the polyurethane comprising the reaction product of a polytetramethylene ether glycol, 4,4'-methylene di(cyclohexylene isocyanate) cured with m-phenylene diamine and at least one face of said belt contains said polyurethane having walnut shell powder incorporated therein.

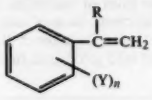
4,196,253
PAPER COATED WITH BINDER AND ORGANIC PIGMENT PARTICLES

Gavin G. Spence, New Castle County, Del., assignor to Hercules Incorporated, Wilmington, Del.

Continuation-in-part of Ser. No. 835,570, Sep. 22, 1977, abandoned. This application May 18, 1978, Ser. No. 906,898
Int. Cl.[2] B32B *5/16*
U.S. Cl. 428—323 26 Claims

1. A coated paper comprising a paper substrate having adhered to at least one surface thereof a coating composition comprised of a binder material and an organic pigment, said organic pigment being water-insoluble graft copolymer particles consisting essentially of the free radical catalyzed graft copolymerization product of (1) at least one ethylenically unsaturated monomer and (2) a water-soluble prepolymer having an RSV of about 0.1 to about 2.5 (1 M NaCl, 1%, 25° C.), the prepolymer moiety of the graft copolymer particles being present on the surface of the particles,

said monomer (1) being selected from the group consisting of methyl alpha-chloroacrylate, ethyl alpha-chloroacrylate, methyl methacrylate, isopropyl methacrylate, phenyl methacrylate, vinyl chloride, acrylonitrile, methacrylonitrile, and monomers having the formula



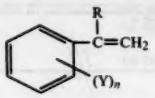
wherein R is hydrogen or methyl, Y is methyl or chlorine, and n is 0, 1, 2, or 3, and said prepolymer (2) being selected from the group consisting of anionic prepolymers and nonionic prepolymers prepared by the addition polymerization of a vinyl monomer or mixtures of vinyl monomers,

the amount of prepolymer (2) employed in preparing the graft copolymer particles being from about 1 part to about 25 parts by weight for each 100 parts by weight of monomer (1) employed, said graft copolymer having a Tg equal to or greater than 75° C.

14. A paper product comprised of cellulosic fibers and an organic pigment, the organic pigment being essentially uniformly dispersed throughout the paper product by way of internal addition to an aqueous dispersion of the cellulosic fibers prior to product formation, said organic pigment being water-insoluble graft copolymer particles consisting essentially of the free radical catalyzed graft copolymerization product of (1) at least one ethylenically unsaturated monomer and (2) a water-soluble prepolymer having an RSV of about 0.1 to about 2.5 (1 M NaCl, 1%, 25° C.), the prepolymer moiety of the graft copolymer particles being present on the surface of the particles,

said monomer (1) being selected from the group consisting of methyl alpha-chloroacrylate, ethyl alpha-chloroacrylate, methyl methacrylate, isopropyl methacrylate, phenyl meth-

acrylate, vinyl chloride, acrylonitrile, methacrylonitrile, and monomers having the formula



wherein R is hydrogen or methyl, Y is methyl or chlorine, and n is 0, 1, 2, or 3, and said prepolymer (2) being selected from the group consisting of anionic prepolymers and nonionic prepolymers prepared by the addition polymerization of a vinyl monomer or mixtures of vinyl monomers,

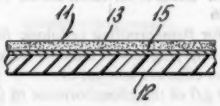
the amount of prepolymer (2) employed in preparing the graft copolymer particles being from about 1 part to about 25 parts by weight for each 100 parts by weight of monomer (1) employed, said graft copolymer having a Tg equal to or greater than 75° C.

4,196,254

PRESSURE-SENSITIVE ADHESIVE TAPE WITH PRIMER

Frank Puskadi, Milltown, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Filed May 5, 1978, Ser. No. 903,283
Int. Cl.[2] B32B 27/08; C09J 7/02
U.S. Cl. 428—341 **11 Claims**



1. A pressure-sensitive adhesive sheet which comprises:

(1) a backing layer of (a) polyethylene or polypropylene film having one of its major surfaces activated to improve its anchorage characteristics, or (b) polyester film or (c) metal foil;

(2) a primer composition coated on one major surface of said backing layer to form a primer layer firmly adhered thereto, said major surface being for polyethylene and polypropylene films, the activated surface; and

(3) a normally tacky and pressure-sensitive acrylate adhesive layer firmly adhered to said backing layer through said primer;

wherein said primer composition consists essentially of an intimate mixture of a primary amino-functional trialkoxy silane and a carboxylated polymer component having an affinity for the acrylate adhesive layer, said carboxylated polymer component being (a) a carboxylated ethylene vinyl acetate resin, or (b) a carboxylated acrylic adhesive polymer, or (c) the combination of a major amount of a polyester polymer and a minor amount of a carboxylated acrylic adhesive polymer; and

wherein said primer composition is distributed in the primer layer in such amounts as to provide at least about five milligrams per square yard of primer composition and at least about one milligram per square yard of silane, with the weight ratio of silane to carboxylated polymer component being between about 1 to 10 and about 4 to 1.

4,196,255

ELASTOMERIC COMPOSITION

Takeshi Suzuki, Kyoto; Yasuyoshi Furukawa, Ikedaminami; Masayasu Tomoda, Otsu, and Yutaka Ueta, Osaka, all of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed Mar. 9, 1979, Ser. No. 19,256
Claims priority, application Japan, Mar. 10, 1978, 53-28101
Int. Cl.[2] C08G 65/32
U.S. Cl. 428—421 **9 Claims**

1. A crosslinkable elastomeric composition which comprises an epichlorohydrin elastomer, a divalent metal oxide or hydroxide, a fluorine-containing polyhydroxy compound and a basic compound having a nitrogen or phosphorus atom in the molecule.

4,196,256

LONG LIFE FUSER ROLL

Clifford O. Eddy; George J. Safford, and Edward F. Bowler, Jr., all of Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 28, 1978, Ser. No. 937,390
Int. Cl.[2] G03G 13/20; B32B 15/08, 27/28
U.S. Cl. 428—422 **41 Claims**

1. A method for manufacturing a laminated article having a support member and a surface layer of a resin copolymer of tetrafluoroethylene and perfluoroalkyl perfluorovinyl ether comprising:

(a) providing a support member;

(b) applying a porous metal plate on the support member by a flame spraying process;

(c) applying fluoropolymer primer to the porous metal plate;

(d) drying the fluoropolymer primer;

(e) applying powder resin copolymer of tetrafluoroethylene and perfluoroalkyl perfluorovinyl ether to the dried primer-coated metal plate; and

(f) heating the powder resin copolymer at a temperature sufficient to fuse the powder resin copolymer until fusion is complete.

14. A laminated article comprising:

a support member having a porous flame sprayed metal surface layer;

a fluoropolymer primer dried upon the flame sprayed metal surface; and

an outer layer over said primer, said outer layer comprising a copolymer resin of perfluoroalkyl perfluorovinyl ether with tetrafluoroethylene, said ether having the formula $C_nF_{2n+1}—O—CF=CF_2$, said outer layer being placed upon the dried primer in the form of a powder coating and fused thereon.

4,196,257

BI-ALKALI TELLURIDE PHOTOCATHODE

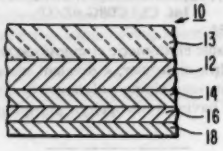
Ralph W. Engstrom, and Arthur F. McDonie, both of Lancaster, Pa., assignors to RCA Corporation, New York, N.Y.

Filed Jul. 20, 1978, Ser. No. 926,338
Int. Cl.[2] H01J 39/06, 1/14
U.S. Cl. 428—457 **16 Claims**

1. In an electron emissive photocathode of the type having sensitivity to light in the ultra violet region and substantial insensitivity to light in the spectral region above 400 nanometers, said photocathode including a conductive base and a

photoemissive surface on said base, the improvement wherein said photoemissive surface comprises tellurium and at least two different alkali metals.

7. A method of making an electron emissive photocathode comprising the steps of depositing successively onto a conductive base tellurium and at least two different alkali metals that react with said tellurium to form a photoemissive surface having sensitivity to light in the ultra violet region and substantial insensitivity to light in the spectral region above 400 nanometers.



4,196,258

MAGNETIC RECORDING MEDIUM AND METHOD OF MANUFACTURING SAME

Hendrikus F. Huisman, and Willem J. Cats, both of Oosterhout, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 5, 1978, Ser. No. 867,163

Claims priority, application Netherlands, Jan. 7, 1977, 7700107

Int. Cl.[2] **G11B** *5/78*

U.S. Cl. 428—447 **4 Claims**

1. A magnetic recording medium comprising a carrier and a magnetizable coating provided thereon said coating comprising a magnetic pigment dispersed in a binder and a silane compound, said silane compound having the formula

$$(RO)_3—Si—R_1$$

where R is alkyl, cycloalkyl, alkoxy alkyl each of at most 10 carbon atoms, phenyl or benzyl and R_1 is chloroalkyl, chlorocycloalkyl or chlorophenylalkyl of which each alkyl radical contains at most 10 carbon atoms.

4,196,259

COATING MATERIALS

Friedrich Augustin, Frechen, and Lothar Bartling, Bergheim-Glessen, both of Fed. Rep. of Germany, assignors to BASF Farben & Fasern, Munster, Fed. Rep. of Germany

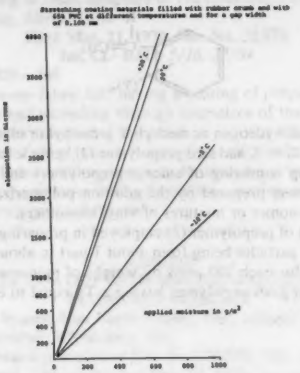
Filed Nov. 13, 1978, Ser. No. 960,024

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1977, 2750903

Int. Cl.[2] **B05D** *3/02;* **B32B** *25/04, 25/12, 27/00*

U.S. Cl. 428—492 **9 Claims**

1. Process comprising preparing stretchable coatings capable of reverting to their initial size for the permanent bridging of joints and cracks in base materials selected from the group consisting of facades, walls and ceilings of constructions, industrial floors and constructions at subgrade level from aqueous dispersions by dispersing therein film forming binders selected from the group consisting of polymer resins, polycondensate resins or polyaddition resins and an elastomeric powder material, said film forming binders having a particle size of between 0.01 and 20 microns, the solid content of the aqueous dispersion of said film forming binders being between 15 and 70% by weight, said elastomeric powder having a grain size distribution between 1 and 500 microns, said elastomeric powder being contained in said aqueous dispersion from 2% by weight to 150% by weight and the pH value of said aqueous dispersions being between 2 and 11, coating said aqueous dispersions on said base materials and drying said aqueous dispersions to said stretchable coatings.



6. Cracks and joints bridged in facades, walls and ceilings with said stretchable coatings prepared by the process of claim 1.

4,196,260

PROCESS FOR FLAMEPROOFING CELLULOSIC FIBROUS MATERIAL

Hermann Nachbur, Dornach, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 28, 1978, Ser. No. 882,011

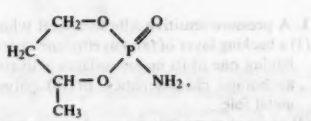
Claims priority, application Switzerland, Mar. 3, 1977, 2666/77

Int. Cl.[2] **B05D** *3/02;* **B32B** *23/08, 27/42*

U.S. Cl. 428—526 **11 Claims**

1. A process for flameproofing cellulosic fibrous material, which comprises applying to said material an aqueous solution which contains an effective amount of

(A) 100 to 400 g/l of the phosphorinane of the formula



and (B) 50 to 300 g/l of an aminoplast precondensate, drying the fibrous material and then subjecting it to a a heat treatment.

6. A fibrous material provided with a flameproof finish according to claim 1.

4,196,261

STABLE BIMETAL STRIP

Earl L. Frantz, Reading, Pa., assignor to Carpenter Technology Corporation, Reading, Pa.

Continuation of Ser. No. 873,619, Jan. 30, 1978, abandoned. This application Oct. 19, 1978, Ser. No. 952,794

Int. Cl.[2] **B32B** *15/18*

U.S. Cl. 428—616 **10 Claims**

1. A thermally responsive device comprising a low-expansion metal strip bonded or welded in face-to-face relation to a high-expansion material formed from an austenitic alloy having high thermal expansion and high electrical resistance combined with good forming and weldability properties, said alloy, in weight percent, consists essentially of about

		w/o
Carbon	up to	0.50
Manganese		15–50
Silicon	up to	2
Phosphorus	up to	0.04
Sulfur	up to	0.04
Nickel		10–35
Cobalt	up to	10

and the balance essentially iron substantially free of chromium.

4,196,262

AL-SI-IN/GA ALLOY CLAD COMPOSITE

Michael J. Pryor, Woodbridge; James M. Popplewell, Guilford, both of Conn., and William H. Anthony, Manchester, Mo., assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Mar. 15, 1979, Ser. No. 20,797
Int. Cl.[2] B32B *15/20*
U.S. Cl. 428—654 **10 Claims**

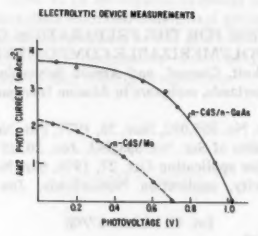
1. An aluminum composite having improved resistance to intergranular corrosion comprising an aluminum base alloy core clad with a brazing alloy consisting essentially of from 4–14% silicon, 0.01–2% of a material selected from the group consisting of indium, gallium and mixtures thereof, and the balance aluminum.

4,196,263

SEMICONDUCTOR DEVICES WITH ENHANCED PROPERTIES

Joseph L. Shay, Marlboro, and Sigurd Wagner, Holmdel, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation of Ser. No. 793,279, May 3, 1977, abandoned. This application Oct. 13, 1978, Ser. No. 951,315
Int. Cl.[2] H01M *6/30, 6/36*
U.S. Cl. 429—111 **8 Claims**



1. A device with enhanced voltage characteristics which is responsive to solar light comprising a first semiconductor material having a surface forming a rectifying junction with an interfacing material chosen from the group consisting of electrolytes, semiconductors, and Schottky barrier forming materials such that when solar light is incident on said interfacing material whose surface is adapted to accept said solar light a generated voltage is developed between said interfacing material and said first semiconductor material characterized in that a second semiconductor material of the same majority carrier type as said first semiconductor material and with a smaller bandgap than said first semiconductor material forms a junction with said first semiconductor material on another surface thereof apart from said surface forming said rectifying junction; wherein the electrochemical potential of the majority carriers in said first semiconductor material is smaller than the electrochemical potential of the majority carriers of said second semiconductor material in isolation and wherein the absolute value of the difference between the electrochemical potential of the majority carriers in said first and said second semiconductor material in isolation is smaller than the bandgap of said second semiconductor material, whereby when said solar light is incident on said interfacing material, majority and minority carriers are generated both in said first semiconductor material and in said second semiconductor material, thereby giving a voltage higher than said generated voltage and thereby giving currents from said generated carriers in said first and second semiconductor material which are currents in series.

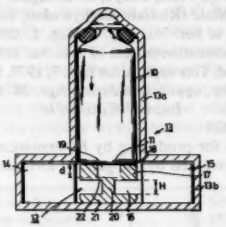
6. The device of claim 1 wherein said first semiconductor material is n-CdS, and said second semiconductor material is n-GaAs.

4,196,264

ACCELERATION ACTIVATED BATTERY

Per Y. Troedsson, and Rune E. Hesselberg, both of Jarfalla, Sweden, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 17, 1978, Ser. No. 952,171
Claims priority, application Sweden, Oct. 18, 1977, 7711701
Int. Cl.[2] H01M *6/38*
U.S. Cl. 429—114 **5 Claims**



1. An acceleration activated battery, comprising:
an ampule having an exterior surface;
a liquid electrolyte contained in the ampule;
a battery cell stack, in fluid communication with the exterior surface of the ampule;
a retainer arranged for supporting the ampule when the battery is unactivated and for breaking the ampule, thereby activating the battery, when a predetermined acceleration force is exerted on the ampule in a given direction;
wherein the retainer comprises:
a support plate having an upper surface facing said exterior surface of the ampule and for supporting the ampule, said surface being disposed substantially transverse to the direction of the force; a lower surface; and an aperture cut through the upper surface and having a bottom at a predetermined depth, said aperture being cut downward substantially along the direction of the force;
a support pin for supporting the support plate, disposed opposite the aperture, and having transverse dimensions smaller than the transverse dimensions of the aperture so that the pin can penetrate through the aperture;
a foot portion for supporting the support pin, having an upper side, arranged such that the distance from the lower surface of the support plate to the upper side of the foot is greater than the depth of the aperture; and
a connection part disposed between said pin and said plate, by means of which the support pin supports the support plate, and having a strength such that the connection part will yield when the predetermined force is exerted on the retainer;
whereby, when the predetermined force is exerted on the

ampule by acceleration of the battery, the connection will yield, the ampule will move relative to and toward and foot portion, and the ampule will then contact the pin and release the electrolyte to flow into the battery cell stack.

4,196,265

METHOD OF PRODUCING ANTIBODIES

Hilary Koprowski, Wynnewood; Walter U. Gerhard, and Carlo M. Croce, both of Philadelphia, all of Pa., assignors to The Wistar Institute, Philadelphia, Pa.

Continuation-in-part of Ser. No. 806,857, Jun. 15, 1977. This application Aug. 11, 1978, Ser. No. 933,092

Int. Cl.[2] A01N *1/02;* **A61K** *39/42*

U.S. Cl. 435—2 **18 Claims**

1. A process for producing viral antibodies comprising fusing a viral antibody producing cell and a myeloma cell to provide a fused cell hybrid, culturing said hybrid and collecting the viral antibodies.

4,196,266

PRODUCTION OF NANAOMYCIN A AND DERIVATIVES THEREOF

Satoshi Omura, Tokyo; Haruo Tanaka, Machida; Juichi Awaya, Souka, and Toju Hata, Tokyo, all of Japan, assignors to The Kitasato Institute (Kitasato Kenkyuosho), Tokyo, Japan

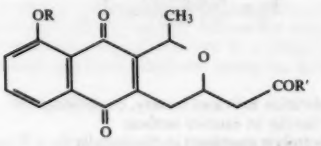
Continuation of Ser. No. 719,744, Sep. 2, 1976, abandoned, which is a continuation-in-part of Ser. No. 558,563, Mar. 14, 1975, abandoned. This application Dec. 7, 1977, Ser. No. 858,215

Claims priority, application Japan, Apr. 28, 1976, 51-49224

Int. Cl.[2] C12D *9/14*

U.S. Cl. 435—125 **4 Claims**

1. A process for producing by fermentation a nanaomycin compound represented by the general formula (I):



(I)

wherein R is H and R' is selected from the group consisting of OH and NH_2, comprising the steps of culturing a microorganism belonging to the genus *Streptomyces rosa* var. notoensis in a medium containing sources of carbon, nitrogen and inorganic substances under suitable conditions so as to produce said nanaomycin compound and accumulate same in the culture broth, and recovering said nanaomycin compound therefrom as the principal product.

4,196,267

EXTRUSION FOAMED ARTICLE AND PROCESS FOR PRODUCING THE SAME

Seizaburo Watanabe; Yuji Seo; Eiji Hattori; Masao Okuda, and Hiroshi Watanabe, all of Suzuka, Japan, assignors to Asahi-Dow Limited, Tokyo, Japan

Continuation of Ser. No. 669,495, Mar. 23, 1976, abandoned. This application Feb. 27, 1978, Ser. No. 881,785

Claims priority, application Japan, Mar. 25, 1975, 50-35758; Oct. 14, 1975, 50-123546

Int. Cl.[2] B29D *77/00*

U.S. Cl. 521—93 **14 Claims**

1. A foamed article having a bulk density from 15 to 200 Kg/m^3 comprising a foamed resinous composition containing 10 to 90 weight percent of an ionomer resin having a melt index of from 0.1 to 50 g/10 min. and 90 to 10 weight percent of a styrenic synthetic resin.

3. A process for producing a foamed article which comprises blending 10 to 90% by weight of an ionomer resin having a melt index from 0.1 to 50 g/10 min. and 90 to 10% by weight of a styrenic synthetic resin, and mixing 100 parts by weight of the resulting blend in the molten state with 5 to 60 parts by weight of a volatile blowing agent, having a Kauri-butanol value up to 25, in an extruder at high temperature and pressure, and extruding the resulting blended mixture into a zone kept under a pressure which is not higher than atmospheric pressure, thereby allowing the extrudate to expand.

4,196,268

HYDROLYSIS-RESISTANT FLEXIBLE POLYURETHANE FOAMS

Jasper H. Brown, East Alton, Ill., and Donald S. T. Wang, St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Jan. 15, 1979, Ser. No. 3,189

Int. Cl.[2] C08G *18/14, 18/34, 18/18*

U.S. Cl. 521—130 **17 Claims**

1. Flexible polyurethane foam composition prepared by subjecting to flexible polyurethane foam-forming conditions a mixture of flexible polyurethane foam-forming reactants including polyester-polyol and diisocyanate, haloalkyl phosphate and alkyl benzyl phthalate in an amount sufficient to increase the hydrolytic stability of said foam.

4,196,269

PROCESS FOR THE PREPARATION OF A COPOLYMERIZABLE COMPOSITION

Lodewijk Roskott, Gorssel, and Arnold Schroeder, Deventer, both of Netherlands, assignors to Akzona Incorporated, Asheville, N.C.

Division of Ser. No. 855,092, Nov. 25, 1977, Pat. No. 4,158,021, which is a division of Ser. No. 588,993, Jun. 20, 1975, Pat. No. 4,097,467. This application Oct. 27, 1978, Ser. No. 955,557

Claims priority, application Netherlands, Jun. 21, 1974, 7408353

Int. Cl.[2] C08L *67/06*

U.S. Cl. 525—27 **5 Claims**

1. A process for the copolymerization of an unsaturated polyester resin which comprises copolymerizing, at a temperature in the range of about 5° C. to about 80° C., an unsaturated polyester resin with an ethylenically unsaturated monomer copolymerizable therewith in the presence of a metal accelerator and a peroxide initiator consisting essentially of an alkylaldehyde peroxide containing not more than 20 carbon atoms and at least 1.5 active oxygen atoms per carbonyl groups of alkylaldehyde, said alkylaldehyde peroxide being selected from the group consisting of an unsubstituted alkylaldehyde peroxide, an alkyl-substituted alkylaldehyde peroxide, and an aryl-substituted alkylaldehyde peroxide, prepared by reacting an alkylaldehyde with not more than 20 carbon atoms with hydrogen peroxide in the form of an aqueous solution having an H_2O_2 content between about 30 and about 85% by weight, in a solvent in which both the alkylaldehyde and the formed peroxide composition are soluble, the molar ratio of carbonyl groups to H_2O_2 in the reaction mixture being between 1:1.5 and 1:4.0, in the presence of an acid catalyst with the simultaneous removal of water by distillation.

4,196,270

HIGH SOLIDS COATING COMPOSITION ADAPTED FOR USE AS AUTOMOTIVE TOPCOAT-#5

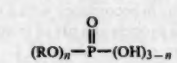
Mohinder S. Chattha, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of Ser. No. 864,965, Dec. 27, 1977, abandoned. This application Sep. 22, 1978, Ser. No. 945,039
Int. Cl.[2] C08L 63/00
U.S. Cl. 525—110 16 Claims

1. A thermosetting coating composition adapted for low temperature bake applications which contains greater than about 60% by weight of nonvolatile solids, and which, exclusive of pigments, solvents and other nonreactive components, consists essentially of:

(A) a polyepoxide resin having a number average molecular weight ($\overline{M}_n$) of between about 140 and about 3,000;

(B) a reactive catalyst comprising at least one organophosphate ester having the formula:



wherein n=1 to 2 and R is selected from the group consisting of mono or dihydroxy alkyl, cycloalkyl, or aryl radicals;

(C) an amine-aldehyde crosslinking agent; and

(D) up to about 45 weight percent based on the total weight of (A), (B), (C) and (D) of a hydroxy functional additive having a number average molecular weight ($\overline{M}_n$) of between about and about 6000, said organophosphate ester being included in said composition in an amount sufficient to provide between about 0.67 and about 1.4 equivalents of acid functionality for each equivalent of epoxy functionality on said polyepoxide resin, and said amine-aldehyde crosslinking agent being included in said composition in an amount sufficient to provide at least about 0.4 equivalents of nitrogen crosslinking functionality for each equivalent of hydroxy functionality included in said composition either as (i) an organic hydroxyl group on said organophosphate ester, (ii) a hydroxyl group on said hydroxy functional additive, or (iii) as a result of esterification of said epoxy functionality of said polyepoxide resin during cure of said coating composition.

4,196,271

ADHESIVE COMPOSITION

Akira Yamada, and Kaoru Kimura, both of Nagoya, Japan, assignors to Toagosei Chemical Industry Co., Ltd., Tokyo, Japan

Filed Dec. 22, 1976, Ser. No. 753,429
Claims priority, application Japan, Dec. 24, 1975, 50-153425; Dec. 26, 1975, 50-155113
Int. Cl.[2] C08L 35/06, 35/08
U.S. Cl. 525—242 20 Claims

1. An adhesive composition comprising a 2-cyanoacrylate and, as an impact strength improving additive, at least one member selected from the group consisting of substituted and unsubstituted aliphatic carboxylic acids having three or more free carboxyl groups, anhydrides thereof, partial esters thereof having at least three free carboxyls, aromatic polycarboxylic acids having three or more free carboxyl groups and anhydrides thereof, said additive being present in an amount sufficient to improve impact strength.

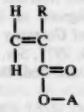
4,196,272

CONTINUOUS PROCESS FOR THE PREPARATION OF AN ACRYLIC ACID-METHYL ACRYLATE COPOLYMER IN A TUBULAR REACTOR

Louis A. Goretta, Naperville, and Robert R. Otremba, Chicago, both of Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.

Filed Nov. 27, 1978, Ser. No. 964,213
The portion of the term of this patent subsequent to Mar. 6, 1996, has been disclaimed.
Int. Cl.[2] C08F 220/06
U.S. Cl. 526—64 8 Claims

1. A method for preparing copolymers of vinyl carboxylic acids and lower alkyl acrylates selected from the group consisting of methyl acrylate and ethyl acrylate, said vinyl carboxylic acids having the formula prior to polymerization:



wherein R is H or CH_3 and A is selected from the group consisting of hydrogen, ammonium or alkali metal ions, said method comprising the steps of polymerizing an aqueous solution of the vinyl carboxylic acid with said lower alkyl acrylate in a tube reactor at a pressure of between 50–350 psig, said pressure being sufficient to maintain the reactants in a liquid state in the presence of a free radical catalyst while maintaining the conditions of the reaction within the limits set forth below:

I. Monomer solids	20–50% by weight
II. Initiation temperature (°F.)	80–180° F.
III. Monomer pH	1.0–6.0
IV. Initiator concentration	2.0–12% by weight (based on monomer)
V. Vinyl carboxylic acid-lower alkyl acrylate weight ratio	60/40–95/5
VI. Residence time	1–15 minutes

said copolymer of vinyl carboxylic acid and lower alkyl acrylate having a molecular weight of from 3,000–300,000.

4,196,273

CURABLE ORGANOPOLYSILOXANE COMPOSITIONS

Kiyoshi Imai, and Masaki Tanaka, both of Annaka, Japan, assignors to Shin-Etsu Chemical Co. Ltd., Tokyo, Japan

Filed Aug. 16, 1978, Ser. No. 934,197
Claims priority, application Japan, Aug. 24, 1977, 52-100643
Int. Cl.[2] C08G 77/06
U.S. Cl. 528—15 7 Claims

1. A curable organopolysiloxane composition consisting essentially of

(a) 100 parts by weight of a diorganopolysiloxane having at least two vinyl groups in the molecule, the organic groups other than the vinyl groups being substituted or unsubstituted monovalent hydrocarbon groups free of aliphatic unsaturation,

(b) from 0 to 100 parts by weight of an organopolysiloxane expressed by the average unit formula

$$[(CH_2{=}CH)(R)_2SiO_{0.5}]_u[(R)_3SiO_{0.5}]_v[SiO_2]_w$$

where the symbol R is a substituted or unsubstituted monovalent hydrocarbon groups free of aliphatic unsaturation and u, v and w are the mole fractions of the respective siloxane units with the proviso that $(u+v)/w$ is in the range from 0.5 to 2.0 and $u+v+w=1$, the content of the vinyl groups being in the range from 0.5 to 3% by weight,

(c) an organohydrogenpolysiloxane having at least three hydrogen atoms directly bonded to the silicon atoms in the molecule in an amount such that from 0.7 to 5 moles of the hydrogen atoms directly bonded to the silicon atoms are provided per mole of the vinyl groups in the components (a) and (b),

(d) from 0.1 to 5 parts by weight of an alkoxy silane having an aliphatically unsaturated group,

(e) from 0 to 500 parts by weight of a filler, and

(f) a catalytic amount of platinum or a platinum compound.

4,196,274

PROCESS FOR THE PRODUCTION OF HYDANTOINS AND POLYHYDANTOIN RESINS

Wilfried Zecher, and Rudolf Merten, both of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

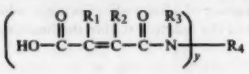
Filed Nov. 23, 1977, Ser. No. 854,110

Claims priority, application Fed. Rep. of Germany, Dec. 18, 1976, 2657560

Int. Cl.[2] C08G *18/34, 18/67;* C07D *401/06, 403/06*

U.S. Cl. 528—73 8 Claims

1. A process for producing hydantoins wherein an organic diisocyanate, diisothiocyanate, polyisocyanate or polyisothiocyanate is reacted with an unsaturated amido acid corresponding to the general formula



in which the radicals

R_1, R_2, $R_3$and R_4 are same or different and represent hydrogen, an aliphatic, aliphatic-aromatic or aromatic radical, and

R_1 and R_2 may additionally represent halogen, and

y is an integer from 1 to 3, at a temperature of from 0° to 450° C.

4,196,275

THERMOPLASTIC POLYESTERS PREPARED FROM BIS(4-β-HYDROXYETHOXYPHENYL)SULFONE

Santos W. Go, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 861,141, Dec. 16, 1977. This application Dec. 13, 1978, Ser. No. 969,025

Int. Cl.[2] C08G *63/66, 63/68*

U.S. Cl. 528—173 2 Claims

1. A thermoplastic copolyester consisting essentially of the polymeric reaction of

(A) reactant(s) selected from terephthalic acid and its C_1 to C_4 alkyl esters, and

(B) reactants, bis (4-beta-hydroxyethoxyphenyl) sulfone and ethylene glycol, and

(C) reactant(s) selected from trimellitic acid, its anhydride, and its C_1 to C_4 alkyl esters,

wherein the amount of said bis (4-beta-hydroxyethoxyphenyl) sulfone is 2–25 mol percent of the amount of A reactant(s), the combined amount of B reactants is about 110 to 300 mol percent of the amount of A reactant(s), and the amount of C reactant(s) is 0.1 to 0.7 mol percent of said A reactants,

said copolyester having oxygen (O_2) and CO_2 permeabilities in cc.mil/100 in.^{2}.day.atm. of less than 9 and less than 62, respectively, a glass transition temperature, Tg, of at least 82° on an unoriented basis, said copolyester further having non-Newtonian flow properties.

4,196,276

HIGH-MOLECULAR WEIGHT, SEGMENTED, POLYCARBONATE ELASTOMERS

Manfred Schreckenberg, Krefeld; Klaus König, Leverkusen; Dieter Freitag, and Volker Serini, both of Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 16, 1978, Ser. No. 869,743

Claims priority, application Fed. Rep. of Germany, Jan. 22, 1977, 2702626

The portion of the term of this patent subsequent to Oct. 2, 1996, has been disclaimed.

Int. Cl.[2] C08G *63/24, 63/64*

U.S. Cl. 528—176 14 Claims

1. A process for the preparation of a high-molecular weight polycarbonate elastomer containing incorporated polymer segments, which segments contain carboxyl groups, comprising reacting a carboxyl group-containing polymer having an average molecular weight ($\overline{M}n$) of more than about 600 with a diphenol and phosgene in accordance with a two-phase boundary polycondensation process at a pH of from about 9 to about 14 and a temperature of from about 0° C. to about 80° C., characterized in that the carboxyl group-containing polymer is a C—C linked polymer containing from 1 to 5 COOH groups.

4,196,277

PERFLUOROISOPROPYLIDENE DIANHYDRIDE AND POLYIMIDES PREPARED THEREFROM

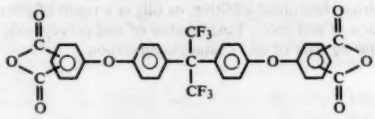
Robert J. Jones, Hermosa Beach, and Michael K. O'Rell, Manhattan Beach, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Continuation of Ser. No. 706,989, Jul. 19, 1976, abandoned. This application Jun. 12, 1978, Ser. No. 914,327

Int. Cl.[2] C08G *73/10*

U.S. Cl. 528—208 4 Claims

1. An aromatic dianhydride compound having the structure:



4,196,278

METHOD FOR THE CONTROLLED POLYMERIZATION OF POLYPHENYLENE OXIDE POLYMERS

James G. Bennett, Jr., and Glenn D. Cooper, both of Delmar, N.Y., assignors to General Electric Company, Pittsfield, Mass.

Filed Dec. 29, 1977, Ser. No. 865,392

Int. Cl.[2] C08G *65/44*

U.S. Cl. 528—215 22 Claims

1. A process for preparation of polyphenylene oxide polymer having a predetermined molecular weight, said process comprising the steps of:

(a) adding oxygen to a reaction mixture comprising a main charge of a phenolic monomer, an oxidative coupling catalyst and a solvent; and

(b) while continuing the addition of oxygen to the reaction mixture of step (a), adding to said reaction mixture an additional amount of phenolic monomer at a rate that is sufficient to control polymerization and producing a polyphenylene oxide polymer of a predetermined molecular weight.

4,196,279

PROCESS FOR PRODUCING POLYESTERS HAVING A HIGH DEGREE OF POLYMERIZATION

Shizuo Azuma; Noritsugu Saiki, and Shoji Kawase, all of Iwakuni, Japan, assignors to Teijin Limited, Osaka, Japan

Filed Jul. 11, 1978, Ser. No. 923,585

Claims priority, application Japan, Jul. 19, 1977, 52-85634; Nov. 9, 1977, 52-133582; Jan. 30, 1978, 53-8234

Int. Cl.[2] C08G *63/06, 63/18*

U.S. Cl. 528—275 5 Claims

1. A process for producing a polyester having a high degree of polymerization with an intrinsic viscosity, measured at 35° C. in o-chlorophenol, of at least 0.5, which comprises melt polymerizing at least one dicarboxylic or hydroxycarboxylic acid or its ester-forming derivative with at least one dihydric alcohol or its ester-forming derivative to form a linear polyester prepolymer having an intrinsic viscosity, measured at 35° C. in o-chlorophenol, of at least 0.2, and further polycondensing the prepolymer; wherein the polycondensation of the prepolymer is carried out in the presence of at least one organic boron compound selected from compounds of the general formula

wherein R_1, R_2 and R_3 are identical or different, and each represents an alkyl group having 6 to 20 carbon atoms, an aralkyl group having 6 to 20 carbon atoms, or an aryl group having 6 to 20 carbon atoms,

and compounds of the general formula

wherein R_1, R_2, R_3 and R_4 are identical or different, and each represent an alkyl group having 6 to 20 carbon atoms, an aralkyl group having 6 to 20 carbon atoms, or an aryl group having 6 to 20 carbon atoms, M represent a monovalent metal.

4,196,280

NOVEL MACROLACTONE DERIVATIVES AND PROCESS OF PRODUCING THEM

Sumio Umezawa; Hamao Umezawa, and Kuniaki Tatsuta, all of Tokyo, Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan

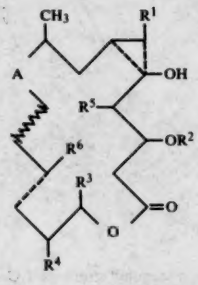
Filed Mar. 3, 1978, Ser. No. 883,301

Claims priority, application Japan, Mar. 9, 1977, 52/25618; Mar. 9, 1977, 52/25619; May 12, 1977, 52/55125

Int. Cl.[2] C07H *17/08;* C07D *313/00*

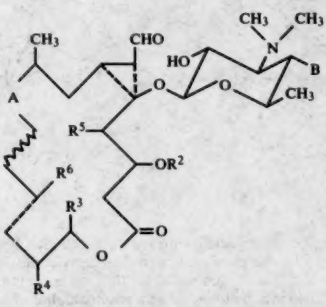
U.S. Cl. 536—17 R 14 Claims

1. A process of producing the aglycone of a macrolide compound of the formula (1)



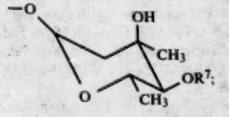
(1)

wherein A represents a carbonyl group or RO—< group; R represents a hydrogen atom, an acyl group, or a forosaminyl group; R^1 represents an aldehyde group protected by a cyclic acetal or a thioacetal; R^2 represents a hydrogen atom or an acyl group; R^3 represents a lower alkyl group; R^4 represents a hydrogen atom, a hydroxymethyl group, or mycinosyloxymethyl group; R^5 represents a methyl group or a methoxy group; R^6 represents a hydrogen atom or a methyl group; ~ represents a single bond or a double bond; ---- represents a single bond, a double bond, or an oxiran-2,3-diyl group; and ——— means that the macrolactone ring forms a 16-membered ring or a 17-membered ring, which comprises reacting a macrolide compound of the formula (2)



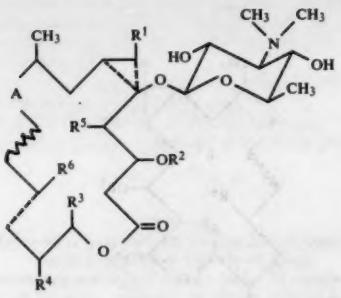
(2)

wherein B represents a hydrogen atom, a hydroxyl group, or an acylmycanosyloxy group

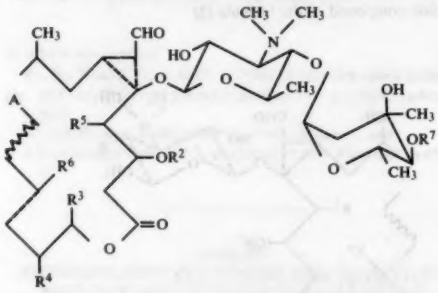


R^7 represents an acyl group; and A; R^2; R^3; R^4; R^5; R^6; ~; ----; and ——— have the same significance as in general formula (1) with a dihydric alcohol of up to 4 carbon atoms, a dithiol, of up to 4 carbon atoms or a mercapto-alcohol in the presence of an organic acid and then reacting the product with an oxidizing agent and an acylating agent, successively.

2. A process of producing a macrolide compound represented by the formula



wherein A represents a carbonyl group or RO—< group; R represents a hydrogen atom, an acyl group, or a forosaminyl group; R^1 represents an aldehyde group protected by a cyclic acetal or a thioacetal; R^2 represents a hydrogen atom or an acyl group; R^3 represents a lower alkyl group R^4 represents a hydrogen atom, a hydroxymethyl group, or mycinosyloxymethyl group; R^5 represents a methyl group or a methoxy group; R^6 represents a hydrogen atom or a methyl group; ~ represents a single bond or a double bond; ---- represents a single bond, a double bond, or an oxiran-2,3-diyl group; and ——— means that the macrolactone ring forms a 16-membered ring or a 17-membered ring which comprises reacting the macrolide compound represented by the formula



wherein R^7 represents an acyl group and A; R^2, R^3; R^4; R^5; R^6; ~; ----; and ——— have the same significance as in the above formula with a dihydric alcohol of up to 4 carbon atoms, a dithiol of up to 4 carbon atoms, or a mercaptoalcohol of up to 4 carbon atoms in the presence of an organic acid.

4,196,281

PSORALENS

John E. Hearst; Henry Rapoport; Stephen Isaacs, all of Berkeley, and Che-Kun J. Shen, Albany, all of Calif., assignors to Regents of the University of California, Berkeley, Calif.

Division of Ser. No. 734,031, Oct. 20, 1976, Pat. No. 4,124,598. This application Aug. 31, 1978, Ser. No. 938,277

Int. Cl.[2] **C07H** *17/00, 21/02, 21/04*

U.S. Cl. 536—28 **12 Claims**

1. Deoxyribonucleic acid having a substituted 4,5',8-trimethyl psoralen having an organic functional substituent on the 4' carbon atom said subtituent being selected from the group consisting of halogenated lower alkyl, hydroxy lower alkyl, lower alkoxy lower alkyl and primary amino lower alkyl covalently bonded thereto on at at least one binding site thereon.

9. A method for interfering with the replication of nucleic acids comprising cross-linking the helices thereof with covalently bonded 4,5',8-trimethyl psoralen having an organic functional substituent on the 4' carbon atom said substituent being selected from the group consisting of halogenated lower alkyl, hydroxy lower alkyl, lower alkoxy lower alkyl and primary amino lower alkyl.

4,196,282

PROCESS FOR MAKING A SHAPEABLE CELLULOSE AND SHAPED CELLULOSE PRODUCTS

Neal E. Franks, Suffern, N.Y., and Julianna K. Varga, Asheville, N.C., assignors to Akzona Incorporated, Asheville, N.C.

Continuation-in-part of Ser. No. 854,957, Nov. 25, 1977, Pat. No. 4,145,532. This application Sep. 1, 1978, Ser. No. 938,907 The portion of the term of this patent subsequent to Mar. 20, 1996, has been disclaimed.

Int. Cl.[2] **C08B** *16/00*

U.S. Cl. 536—56 **22 Claims**

1. In a process for dissolving cellulose in a tertiary amine N-oxide solvent for the cellulose and thereafter shaping the solution and separating the cellulose from the tertiary amine N-oxide, the improvement wherein a solution containing up to about 44% cellulose is prepared in a solvent for the cellulose comprising a tertiary amine N-oxide and from 0.8% to about 29% by weight of water wherein the maximum water content in the solvent decreases substantially linearly with increase in cellulose content.

4,196,283

PROSTAGLANDIN DERIVATIVES

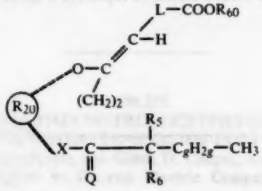
Roy A. Johnson, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 819,856, Jul. 28, 1977, Pat. No. 4,123,441, which is a continuation-in-part of Ser. No. 725,546, Sep. 22, 1976, abandoned, which is a continuation-in-part of Ser. No. 716,960, Aug. 23, 1976, abandoned. This application Aug. 11, 1978, Ser. No. 932,962

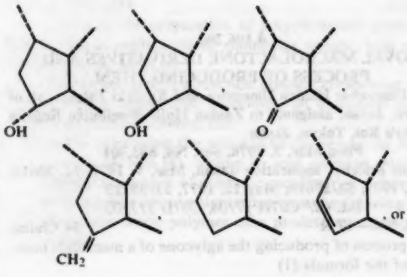
Int. Cl.[2] **C07D** *311/02*

U.S. Cl. 542—426 **15 Claims**

1. A 4Z compound of the formula



wherein (R_{20}) is



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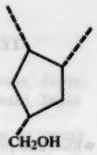
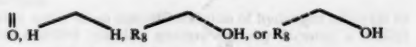
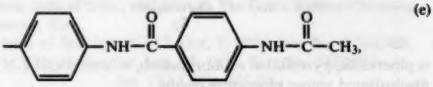


wherein L is $-(CH_2)_d-C(R_2)_2-$
wherein d is zero to 5, R_2 is hydrogen, methyl, or fluoro, being the same or different with the proviso that one R_2 is not methyl when the other is fluoro,
wherein Q is

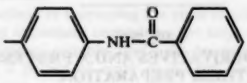


wherein R_8 is hydrogen or alkyl of one to 4 carbon atoms, inclusive.
wherein R_{60} is (a) cycloalkyl of 3 to 10 carbon atoms, inclusive, (b) aralkyl of 7 to 12 carbon atoms, inclusive, (c) phenyl, (d) phenyl substituted with one, 2, or 3 chloro or alkyl of one to 4 carbon atoms, inclusive,

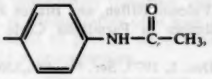
(e)



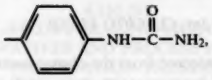
(f)



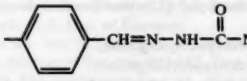
(g)



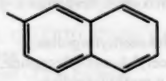
(h)



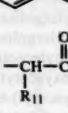
(i)



(j)



(k)



wherein R_{10} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, and wherein R_1 is hydrogen or benzoyl,
wherein C_gH_{2g} is alkylene of one to 9 carbon atoms, inclusive, with one to 5 carbon atoms, inclusive in the chain between $-CR_5R_6-$ and terminal methyl, wherein R_5 and R_6 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_5 and R_6 is fluoro only when the other is hydrogen or fluoro, and
wherein X is
(1) trans—CH=CH—
(2) cis—CH=CH—
(3) —C≡C— or
(4) $-CH_2CH_2-$;
including the lower alkanoates thereof.

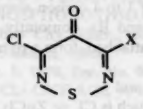
4,196,284

5-SUBSTITUTED-THIO-3-CHLORO-4H-1,2,6-THIADIAZIN-4-ONES

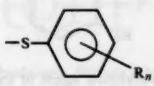
Clinton J. Peake; Wayne N. Harnish, both of Medina, and Bruce L. Davidson, Middleport, all of N.Y., assignors to FMC Corporation, Philadelphia, Pa.

Division of Ser. No. 782,816, Mar. 30, 1977, Pat. No. 4,100,281. This application May 12, 1978, Ser. No. 905,251
Int. Cl.[2] C07D *285/16*
U.S. Cl. 544—8 **2 Claims**

1. A compound of the formula



wherein X is alkylthio having 4–7 carbon atoms, phenyl (lower)alkylthio, cycloalkylthio having 5–7 ring carbon atoms, or substituted phenylthio having the formula



wherein each are R is independently lower alkyl, lower alkoxyl, lower alkanoylamido, lower alkoxycarbonyl, nitro, cyano, or halogen, and n is an integer having a value of 1–3 inclusive, with the proviso that when R is lower alkyl or halogen n may have a value of 1–5 inclusive, and with the further proviso that X is other than mono(lower)alkylthio or mono (lower) alkylphenylthio.

4,196,285

ANTIBIOTIC PURIFICATION PROCESS

Paul F. Schubert, New York, N.Y., assignor to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 802,710, Jun. 2, 1977, abandoned. This application Jun. 28, 1978, Ser. No. 919,649
Int. Cl.[2] C07D *501/02*
U.S. Cl. 544—20 **4 Claims**

1. A process for separating Cephamycin C from fermentation broth impurities which comprises (a) passing a filtrate of a fermentation broth containing Cephamycin C at a pH of from about 1.8 to about 2.5 through a cation ion exchange resin having a particle size of 30–60 U.S. Standard size; (b) washing the column with 1–2 bed volumes of either water or a dilute aqueous stream containing a small amount of Cephamycin C; (c) displacing up to 1 bed volume with 10% aqueous sodium chloride; (d) eluting with the recirculating streams combined from the previous two steps, said recirculating streams having an adjusted pH of between about 7–8; and (e) recovering the purified concentrated Cephamycin C solution, the entire process being conducted at between about 0–5° C.

4,196,286

PROCESS FOR THE MANUFACTURE OF BASIC OXAZINE DYESTUFFS

Erwin Brunn, Grenzach-Wyhlen, Fed. Rep. of Germany, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

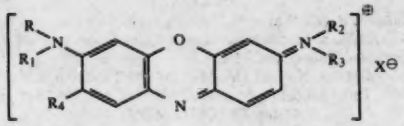
Continuation of Ser. No. 702,552, Jul. 6, 1976, abandoned. This application Dec. 21, 1977, Ser. No. 862,881

Claims priority, application Switzerland, Jul. 11, 1975, 9098/75

Int. Cl.[2] C07D *265/28*

U.S. Cl. 544—103 **5 Claims**

1. A process for the manufacture of a basic oxazine dyestuff of the formula



wherein

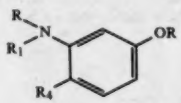
R, R_2 and R_3 are alkyl of 1 to 4 carbon atoms and

R_1 is H or alkyl of 1 to 4 carbon atoms, or

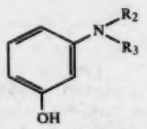
R and R_1, or R_2 and R_3, conjointly with the nitrogen to which they are attached, form a pyrrolidine, piperidine or morpholine ring,

R_4 is H or methyl and

$X^{\ominus}$ is an anion, which is CL or $ZnCl_3$ wherein a compound of the formula



is treated with a nitrosylating agent in the presence of an hydrochloric acid or sulphuric acid at room temperature in a solvent, wherein the solvent is a cyclic ether, sulpholane or an alkyl-substituted amide, alone or mixed with water or an aliphatic alcohol, to form a suspension containing the corresponding nitroso compound, and reacting said nitroso compound, without isolation from said suspension, with an aminophenol of the formula



in a condensation reaction by heating at an elevated temperature of 70° to 75° C. to form said basic oxazine dyestuff.

4,196,287

PROCESS FOR THE CATALYTIC PRODUCTION OF 2-SUBSTITUTED PYRIDINES

Peter Hardt, Visp, Switzerland, assignor to Lonza Ltd., Gampel, Switzerland

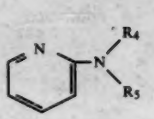
Continuation-in-part of Ser. No. 724,939, Sep. 20, 1976, abandoned. This application Oct. 17, 1977, Ser. No. 843,033

Claims priority, application Switzerland, Sep. 18, 1975, 12139/75; Oct. 15, 1976, 013079/76; Aug. 2, 1977, 009471/77

Int. Cl.[2] C07D *213/08, 213/74*

U.S. Cl. 544—124 **21 Claims**

1. A process for the catalytic production of a 2-N,N-disubstituted amino pyridine having the formula:



which comprises reacting a cyano compound and acetylene in the presence of cobaltocene, which is a catalyt, said reaction being conducted at a pressure between 3 and 20 atmospheres of acetylene, said cobaltocene not being converted to a different valance state during the process, and said cyano compound being a N,N-disubstituted cyanamide having the formula:

wherein R_4 and R_5 are alkyl having 1 to 6 carbon atoms, cycloalkyl having 3 to 9 carbon atoms or aryl having 6 to 10 carbon atoms, or

is piperidino, pyrrolidino or morpholino, whereby said 2-N,N-disubstituted amino piperidine results.

4,196,288

ERGOLINE DERIVATIVES AND A PROCESS FOR THEIR PREPARATION

Enzo Beacco, Limbiate; Luigi Bernardi, Milan; Enrico Di Salle, Milan; Giovanni Falconi, Milan, and Bianca Patelli, Milan, all of Italy, assignors to Farmitalia Carlo Erba S.p.A., Milan, Italy

Filed Dec. 1, 1977, Ser. No. 856,536

Claims priority, application United Kingdom, Dec. 6, 1976, 50746/76

Int. Cl.[2] C07D *457/02*

U.S. Cl. 544—125 **22 Claims**

1. A compound selected from the class consisting of:

(a) 6-methyl-8-(5'-bromonicotinoyloxyacetyl)-ergoline;

(b) 1,6-dimethyl-(5'-bromonicotinoyloxyacetyl)-ergoline;

(c) 10-methoxy-6-methyl-8-(5'-bromonicotinoyloxy-acetyl) - ergoline;

(d) 6-methyl-8-acetoxyacetylergoline;

(e) 6-methyl-8-hydroxyacetylergoline;

(f) 6-methyl-8-hydroxyacetylergoline-2'-pyrrolcarboxylate;

(g) 1,6-dimethyl-8-hydroxyacetylergoline-2'-pyrrolcarboxylate;

(h) 8-benzoyloxyacetyl-6-methylergoline;

(i) 8-isonicotinoyloxyacetyl-6-methylergoline;

(j) 8-caproyloxyacetyl-6-methylergoline;

(k) 8-pivaloyloxyacetyl-6-methylergoline;

(l) 8-nicotinoyloxyacetyl-6-methylergoline;

(m) 8-(2',6'-dimethoxybenzoyloxyacetyl)-6-methylergoline;

(n) 8-(2',6'-dimethylbenzoyloxyacetyl)-6-methylergoline;

(o) 6-methyl-8-(5'-methyl-2'-pyrimidylmercapto)-acetylergoline;

(p) 6-methyl-8-(5'-methyl-2'-1,3,4-thiazolylmercapto)-acetylergoline;

(q) 6-methyl-8-morpholinoacetylergoline;

(r) 1,6-dimethyl-8-morpholinoacetylergoline;

(s) 6-methyl-8-diethylaminoacetylergoline;

(t) 6-methyl-8-piperidinoacetylergoline;

(u) 6-methyl-8-(4'-methylpiperazino)acetylergoline.

4,196,289
PROCESS FOR PRODUCING TRIALLYL ISOCYANURATE

Hiroyasu Saito, and Akio Sekiguchi, both of Iwaki, Japan, assignors to Nippon Kasei Chemical Co., Ltd., Iwaki, Japan

Filed Sep. 6, 1978, Ser. No. 940,117
Claims priority, application Japan, Mar. 31, 1978, 53/37739
Int. Cl.[2] C07D *251/34*
U.S. Cl. 544—221 7 Claims

1. In a process for producing triallyl isocyanurate by reaction of an alkali cyanate and an allyl halide in the presence of an aprotic polar solvent, to form a reaction mixture comprising the triallyl isocyanurate, the aprotic polar solvent and salt by-product, the improvement comprising:

distilling said reaction mixture to remove said aprotic polar solvent;

adding water or an aqueous solution of hydrogen chloride to the distilled reaction mixture thereby forming a triallyl isocyanurate layer and an aqueous layer; and

separating the triallyl isocyanurate layer from said aqueous layer.

4,196,290
METHOD OF OBTAINING URIC ACID FROM NATURAL PRODUCTS

John D. Douros, Jr., Littleton, and Ira T. Warder, Jr., Lakewood, both of Colo., assignors to The Gates Rubber Company, Denver, Colo.

Division of Ser. No. 80,517, Oct. 7, 1970, Pat. No. 3,850,930. This application Aug. 15, 1973, Ser. No. 389,392
Int. Cl.[2] C07D *473/04*
U.S. Cl. 544—266 1 Claim

1. The method of increasing the yield of uric acid from uric acid bearing excrement comprising the steps of:

first collecting suitable uric acid bearing waste material within a period of eight days after production of said excrement; and

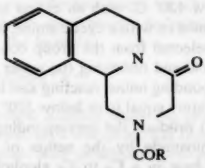
subsequently, immediately thereafter, drying the collected excrement at a temperature of at least 350° F. to destroy microorganisms to prevent decomposition of said uric acid by said microorganisms.

4,196,291
2-ACYL-4-OXO-PYRAZINO-ISOQUINOLINE DERIVATIVES AND PROCESS FOR THE PREPARATION THEREOF

Jürgen Seubert, Darmstadt; Herbert Thomas, and Peter Andrews, both of Wuppertal, all of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschraenkter Haftung, Darmstadt, Fed. Rep. of Germany

Division of Ser. No. 742,133, Nov. 15, 1976, Pat. No. 4,141,978, which is a division of Ser. No. 533,467, Dec. 16, 1974, Pat. No. 4,001,411. This application Dec. 18, 1978, Ser. No. 970,302
Claims priority, application Fed. Rep. of Germany, Dec. 17, 1973, 2363539
Int. Cl.[2] C07D *471/04;* H61K *31/495*
U.S. Cl. 544—344 15 Claims

1. A compound of the formula



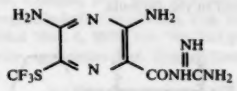
wherein R is phenyl mono-substituted in the o-position by fluorine or in the m- or p-position by fluorine, chlorine, nitro, hydroxy, amino, formylamino, acetylamino, pentanoylamino, hexanoylamino, octanoylamino, oleoylamino, methoxyacetylamino, methylamino, dimethylamino or allylamino, or a physiologically acceptable acid addition salt thereof.

4,196,292
6-SUBSTITUTED AMILORIDE DERIVATIVES

Otto W. Woltersdorf, Jr., Chalfont; Susan J. deSolms, Norristown, and Edward J. Cragoe, Jr., Lansdale, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jun. 29, 1977, Ser. No. 811,011
Int. Cl.[2] C07D *241/34;* A61K *31/495*
U.S. Cl. 544—407 1 Claim

1. A compound of the formula:

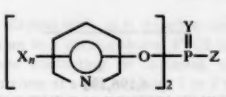


4,196,293
O,O-BIS(SUBSTITUTED PYRIDINYL)PHOSPHONATES AND PHOSPHONOTHIOATES

Chester E. Pawloski, Bay City, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Dec. 1, 1978, Ser. No. 965,544
Int. Cl.[2] C07F *9/38, 9/40*
U.S. Cl. 546—25 8 Claims

1. A compound having the formula:



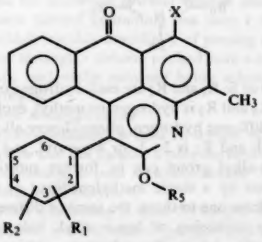
wherein X represents hydrogen, fluoro, chloro, bromo, trifluoromethyl or methyl; n represents an integer from 1 to 3; Y represents oxygen or sulfur; and Z represents C_{2-3} alkyl, haloalkyl of 1 to 2 carbon atoms with halo being fluoro, chloro or bromo, ethenyl, phenyl, phenylmethyl or cyclohexyl.

4,196,294
ORANGE ANTHRAPYRIDINE MONOMERIC COLORANTS AND COLORANT PRECURSORS

Leonard A. Bunes, San Carlos, Calif., assignor to Dynapol, Palo Alto, Calif.

Division of Ser. No. 751,856, Dec. 17, 1976, abandoned. This application Apr. 28, 1978, Ser. No. 900,835
Int. Cl.[2] A23L *1/275;* C09B *5/14*
U.S. Cl. 546—76 27 Claims

1. A compound of the formula



wherein R_1 and R_2 are independently selected from the group consisting of hydrogen, fluoro, chloro, bromo, iodo,, lower alkoxy of 1 through 3 carbon atoms, nitro, sulfonate and alkyl of 1 through 3 carbon atoms, R_5 is alkyl of 1 through 4 carbon

atoms or alkyl sulfonate of 1 through 4 carbon atoms; and X is chloro, bromo or iodo.

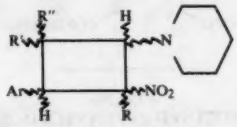
4,196,295

PIPERIDYL PHENYL NITRO CYCLOBUTANE DERIVATIVES

Martin J. Jacobs, Terre Haute, Ind., assignor to International Minerals and Chemical Corporation, Libertyville, Ill.

Filed May 30, 1978, Ser. No. 910,711
Int. Cl.[2] C07D *295/06*
U.S. Cl. 546—232 **11 Claims**

1. A compound of the formula



wherein Ar is phenyl substituted in one or more positions with substituents selected from the group consisting of halogen, hydroxy, lower alkoxy having from 1 to about 5 carbon atoms, and lower alkyl having from 1 to about 5 carbon atoms and wherein R, R' and R" are similar or dissimilar and are each selected from the group consisting of lower alkyl of from 1 to about 5 carbon atoms.

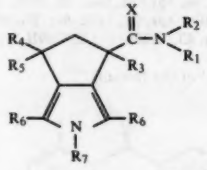
4,196,296

CYCLOPENTA[C]PYRROLE DERIVATIVES

Malcolm R. Bell, and Rudolf Oesterlin, both of East Greenbush, N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 772,003, Feb. 25, 1977, Pat. No. 4,126,620, which is a continuation-in-part of Ser. No. 703,949, Jul. 9, 1976, Pat. No. 4,098,797, which is a division of Ser. No. 558,807, Mar. 17, 1975, Pat. No. 4,008,250, which is a continuation-in-part of Ser. No. 346,005, Mar. 29, 1973, Pat. No. 3,928,380. This application Dec. 21, 1977, Ser. No. 862,944
Int. Cl.[2] C07D *401/04*
U.S. Cl. 546—272 **5 Claims**

1. A compound having the formula



where X is O or S; R_1 and R_2 are each hydrogen or loweralkyl; each of R_3, R_4 and R_5 is hydrogen or methyl; each R_6 group is the same or different hydrogen, phenyl-lower-alkyl, methyl or lower-alkenyl; and R_7 is 2-, 3- or 4-pyridyl, and wherein the phenyl-lower-alkyl group can be further substituted in the phenyl nucleus by a single methylenedioxy or loweralkoxy group or by from one to three, the same or different, members of the group consisting of lower-alkyl, halogen, hydroxy, trifluoromethyl, lower-alkanoylamino, amino, di-lower-alkylamino, di-lower-alkylaminomethyl, carboxy, carboxamido, carbo-lower-alkoxy, lower-alkylmercapto, lower-alkylsulfinyl, lower-alkylsulfonyl, nitro and sulfamoyl except that both R_6 groups are not simultaneously hydrogen.

4,196,297

PROCESSES FOR SEPARATING OF ENANTIOMERS BY CRYSTALLIZATION

Nancy S. Kurose, Norwalk, and Arnold Zweig, Westport, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Nov. 6, 1978, Ser. No. 958,219
Int. Cl.[2] C07D *233/32*
U.S. Cl. 548—320 **8 Claims**

1. A process for separating optical isomers which comprises: dissolving a mixture containing a preponderance of one enantiomer of 1-(2-methoxyethyl)-4-phenyl-2-imidazolidone in a selected solvent, wherein said solvent is (A) a mixture of (1) at least one ester of lower aliphatic alcohol and lower aliphatic carboxylic acid and (2) liquid aliphatic or cycloaliphatic hydrocarbon or lower aliphatic ether, or (B) an alkylene glycol dialkyl ether, cooling the solvent to form crystals of a racemic mixture, and separating the racemic crystals from the solvent containing the preponderant enantiomer.

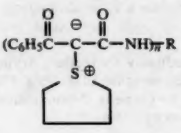
4,196,298

CYCLIC SULFONIUM YLIDS

Thomas C. Klingler, Baton Rouge, La., and Donald L. Schmidt, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 592,841, Jul. 2, 1975, abandoned. This application Nov. 6, 1978, Ser. No. 958,275
Int. Cl.[2] C07D *333/24*; C08L *51/00*
U.S. Cl. 549—77 **8 Claims**

1. A compound corresponding to the formula



I

wherein R is a hydrocarbylene radical, or a hydrocarbylene radical whose chain length is interrupted by an atom of oxygen or sulfur, of from 2 to about 20 carbon atoms.

4,196,299

PROCESS FOR MANUFACTURING THIENYL-2 ACETIC ACID

Jean Claude Vallejos, and Yani Christidis, both of Paris, France, assignors to Hoechst France, Puteaux, France

Filed Mar. 31, 1978, Ser. No. 892,435
Claims priority, application France, Apr. 19, 1977, 77 11775
Int. Cl.[2] C07D *333/24*
U.S. Cl. 549—79 **11 Claims**

1. Process for manufacturing thienyl-2 acetic acid from acetylthiophene comprising, condensing acetylthiophene at a temperature below 120° C. with an excess of a C_4 to C_8 aliphatic primary amine or with a cyclic amine, in the presence of an acid catalyst selected from the group consisting of formic acid and acetic acid and removing the water formed, so as to obtain the corresponding imine, reacting said imine with excess sulfur at a temperature equal to or below 100° C. in a basic and aprotic solvent to produce the corresponding thioamide, hydrolysing said thioamide by the action of an excess of a strongly alkaline base in a C_4 to C_8 alcohol or in ethylene glycol, if necessary in the presence of water, so as to obtain an alkali salt of thiophene-2 acetic acid, and finally treating the latter with a strong acid in aqueous solution to liberate the thenyl-2 acetic acid.

4,196,300

α-ALKYL-SUBSTITUTED GLYCIDATES AND THIOGLYCIDATES

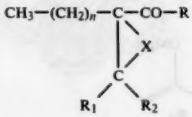
Richard J. Mohrbacher, Maple Glen; Winston Ho, Hatfield, and Gene Tutwiler, Churchville, all of Pa., assignors to McNeilabs, Inc., Fort Washington, Pa.

Continuation-in-part of Ser. No. 770,970, Feb. 22, 1977, abandoned, which is a continuation-in-part of Ser. No. 615,628, Sep. 22, 1975, abandoned. This application Aug. 18, 1978, Ser. No. 934,911

Int. Cl.[2] C07D *331/02, 303/40*

U.S. Cl. 549—90 **25 Claims**

1. A compound selected from the group consisting of glycidic and thioglycidic acid derivatives having the formula:



wherein n is an integer from 10 to 15; R is a member selected from the group consisting of OH, O-loweralkyl, NH_2, NH-loweralkyl, NH-loweralkyl-OH and N(loweralkyl)$_2$; X is a member selected from the group consisting of O and S; and each of R_1 and R_2 is a member selected from the group consisting of hydrogen and loweralkyl; provided that, when said R is other than O-lower-alkyl, then at least one of said R_1 and R_2 is hydrogen; and the therapeutically active basic salts of the foregoing acids.

14. Methyl 2-tetradecylthioglycidate.

4,196,301

2,4,6-TRIALKYL-3-HYDROXYBENZYLMALONATE

John D. Spivack, Spring Valley, and Martin Dexter, Briarcliff Manor, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 693,387, Jun. 7, 1976, Pat. No. 4,093,618, which is a division of Ser. No. 494,156, Aug. 2, 1974, Pat. No. 3,988,363, which is a continuation-in-part of Ser. No. 400,603, Sep. 25, 1973, abandoned. This application Mar. 30, 1978, Ser. No. 891,579

Int. Cl.[2] C07C *69/76*

U.S. Cl. 560—75 **1 Claim**

1. The compound di-n-octadecyl 4-tert.-butyl-2,6-dimethyl-3-hydroxybenzylmalonate.

4,196,302

QUATERNARY PHOSPHONIUM SALTS BEARING CARBAMATE GROUPS

Arlen W. Frank, Slidell, La., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 964,853, Nov. 29, 1978. This application Mar. 6, 1979, Ser. No. 18,087

Int. Cl.[2] C07C *125/06;* **C09K** *3/28*

U.S. Cl. 560—24 **3 Claims**

1. A process for preparing a quaternary phosphonium salt bearing at least one carbamate group attached through nitrogen, which comprises condensing a hydroxymethyl phosphonium salt having the formula

$$[R_{4-n}P(CH_2OH)_n]^+X^-$$

where R is a radical selected from the group consisting of alkyl, cycloalkyl and aryl, n is an integer from 1 to 4, and X is an inorganic radical, with an alkyl carbamate having the formula NH_2CO_2R', in a molar ratio of at least 1:1 with respect to n, at a temperature of 75° C. to 150° C. and a pressure of about atmospheric, and recovering the product from the resulting reaction mixture.

4,196,303

D-ISOMENTHOXYACETIC ACID

Bernard J. Kane, Atlantic Beach, and Sean G. Traynor, Jacksonville, both of Fla., assignors to SCM Corporation, New York, N.Y.

Filed Mar. 20, 1978, Ser. No. 890,622

Int. Cl.[2] C07C *61/38, 69/74, 103/737*

U.S. Cl. 560—126 **4 Claims**

1. N-Ethyl d-isomenthoxyacetamide.

4. d,l-Menthyl d-isomenthoxy acetate.

4,196,304

SEPARATION OF STEREOISOMERIC CYCLIC CARBOXYLIC ACIDS

Klaus Naumann, Cologne, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

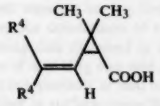
Filed Mar. 6, 1978, Ser. No. 883,979

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1977, 2713538

Int. Cl.[2] C07C *51/00*

U.S. Cl. 562—401 **6 Claims**

1. A process for the separation of the stereoisomers of a stereoisomer mixture of a cyclic carboxylic acid of the formula



in which

R^4 is alkyl or alkenyl with up to 4 carbon atoms, alkoxycarbonyl with up to 5 carbon atoms, F, Cl or Br,

which comprises contacting an aqueous solution of the steroisomeric mixture at a pH of about 7 to 9 with an organic solvent selected from the group consisting of an aliphatic or cycloaliphatic optionally halogenated hydrocarbon, an aromatic hydrocarbon and an aliphatic ether, whereby the cis or endo isomeric free acid enters the organic solvent while the trans or exo isomer remains in the aqueous solution as a salt, and separating the aqueous solution from the organic solvent, thereby to separate the isomers.

4,196,305

PROCESS FOR REMOVAL OF PHENOLS FROM DILUTE AQUEOUS SOLUTIONS THEREOF

Clarence R. Murphy; S. Paul Thackaberry, both of Houston, Tex.; Robert E. Boehme, deceased, late of Houston, Tex., and by Helen J. Boehme, legal representative, Kalamazoo, Mich., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

Filed Aug. 10, 1978, Ser. No. 932,727

Int. Cl.[2] C07C *37/24*

U.S. Cl. 568—758 **3 Claims**

1. A process for removing a water-soluble phenol from an aqueous solution thereof containing less than 1 weight % of said phenol which consists essentially of passing said aqueous phenol solution through a column packed with a mass of olefin polymer fibrils; said olefin polymer being selected from the group consisting of:

a. an ethylene homopolymer,

b. a copolymer containing at least 90 weight % of polymerized ethylene and the balance a polymerized olefin hydrocarbon containing at least 4 carbon atoms,

c. a propylene homopolymer,

d. a copolymer containing at least 50 weight % of polymerizd propylene and the balance polymerized ethylene; and

e. a mixture of any of (a), (b), (c), and (d) said fibrils having been prepared by precipitating an olefin polymer from an organic solvent solution thereof under conditions of high shear.

4,196,306

1-ACYL-2,6,6-TRIMETHYLCYCLOHEXENE DERIVATIVES, PROCESSES FOR PRODUCING SAME, INTERMEDIATES THEREFOR AND ORGANOLEPTIC USES THEREOF

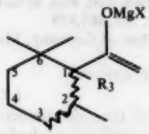
Robert W. Trenkle, Bricktown; Braja D. Mookherjee, Holmdel; Robin Kasper, Eatontown; Manfred H. Vock, Locust; Joaquin Vinals, Red Bank, all of N.J.; Jacob Kiwala, Brooklyn, N.Y., and Frederick L. Schmitt, Holmdel, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 965,418, Dec. 1, 1978. This application May 15, 1979, Ser. No. 39,153

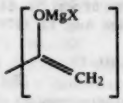
Int. Cl.[2] *C07C 33/02*

U.S. Cl. 568—824 **5 Claims**

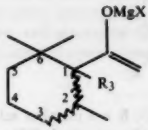
1. An organometallic compound defined by the structure:



wherein X is selected from the group consisting of chloro, bormo and iodo; R_3 is hydrogen or no group; one of the wavy lines is a carbon-carbon double bond and the other of the wavy lines is a carbon-carbon single bond, with the proviso that when the $\Delta^{2,3}$ bond is a carbon-carbon double bond, then R_3 is hydrogen and R_3 is the group:



are so juxtaposed that the genus defined by the structure:



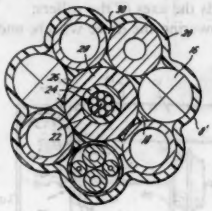
exists in a "+" and a (−).

4,196,307

MARINE UMBILICAL CABLE

Boyd B. Moore, and Clarence E. Kendall, Jr., both of Houston, Tex., assignors to Custom Cable Company, Houston, Tex.

Filed Jun. 7, 1977, Ser. No. 804,422
Int. Cl.[2] H01B 7/14; H02G 9/12
U.S. Cl. 174—47 9 Claims



1. A marine umbilical cable permitting support of an underwater device and carrying conduits to said device, comprising:

(a) a stress member disposed axially along the umbilical cord;

(b) an inner polyurethane jacket extruded onto the stress member of Step (a);

(c) a high strength, highly resilient, low durometer elastomer material, cylindrically extruded onto the jacket, said resilient material thereby tending to distribute evenly radial loading upon the umbilical cable resulting from disposing the umbilical cable around a reel, over a conveyor or sheave;

(d) conventional elements helically cabled around the extruded resilient material (c);

(e) a resilient fill material injected during the cabling process into the internal interstices formed between the exterior surface of the extruded resilient material (c) and the surfaces of the helically cabled elements (d); and

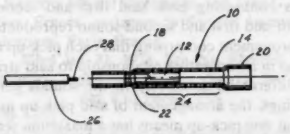
(f) a jacket extruded onto the exterior of the combined apparatus of (a) through (e).

4,196,308

INSULATED CRIMP SPLICER

Dennis C. Siden, Portola Valley, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Filed Jan. 28, 1976, Ser. No. 653,008
Int. Cl.[2] H01R 5/10
U.S. Cl. 174—84 C 12 Claims



1. A crimp splicer for splicing electrical wires comprising: a crimp barrel consisting essentially of a ductile metal, and an insulating sleeve consisting essentially of a heat-shrinkable material having a bore formed therein, said barrel removably retained in said bore to enable removal of said barrel for crimping and the reinsertion of said barrel therein without damaging said sleeve.

4,196,309

SEMICONDUCTOR DEVICE SUBASSEMBLY AND MANUFACTURE THEREOF

Robert G. Thomas, c/o R. G. Thomas Corporation, 61 Grand Ave., Palisades Park, N.J. 07650

Filed Jan. 30, 1978, Ser. No. 873,503
Int. Cl.[2] H01R 3/00
U.S. Cl. 174—94 R 10 Claims

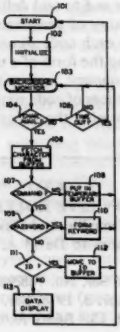
1. A semiconductor device axial lead subassembly comprising, in combination: an elongated thermally and electrically conductive metal lead member having first and second ends; a refractory metal slug for connection to said first end of said lead member; a brazing disk disposed in contact with respective surface portions of said slug and said first end of said lead member; first means independent of said brazing disk mechanically securing together in surface-to-surface contact opposing surface portions of said lead member and said slug; said brazing disk adapted to permanently secure together said slug and said lead member.

4,196,310

SECURE SCA BROADCASTING SYSTEM INCLUDING SUBSCRIBER ACTUATED PORTABLE RECEIVING TERMINALS

Aubry S. Forman, Toledo, Ohio; Charles A. Schultz, Jr., and John F. Schultz, both of Gainesville, Fla., assignors to Digital Data, Inc., Sylvania, Ohio

Division of Ser. No. 675,504, Apr. 9, 1976, Pat. No. 4,112,369.
This application Nov. 3, 1977, Ser. No. 848,269
Int. Cl.[2] H04I 9/02
U.S. Cl. 178—22 7 Claims



1. A secure information broadcasting system including a transmitting station for encoding as binary coded bits data received from an information source, for modulating a carrier wave with the data bits and for transmitting the modulated carrier wave and a plurality of portable terminals for receiving and selectively displaying the data, each of said portable terminals comprising:

receiver means for separating the modulation signal from the carrier wave and generating the encoded binary data bits from the modulation signal;

keyboard means for generating a binary coded password individual to each of said portable terminals;

storage means for generating a binary coded identification number individual to each of said portable terminals; and

processing means responsive to said password and said identification number for generating a binary coded keyword having a predetermined number of bits, said processing means being responsive to said keyword and a number of said encoded binary data bits equal to said predetermined number for decoding said encoded binary data bits.

4,196,311

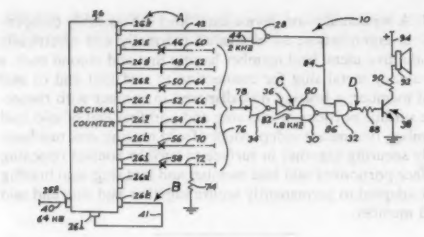
BINARY-CODED MESSAGE COMMUNICATION

El Don L. Hoven, Newberg, Oreg., assignor to Ford Industries, Inc., Portland, Oreg.

Filed Jun. 7, 1978, Ser. No. 913,285

Int. Cl.[2] H04L *7/00;* **H04M** *11/00*

U.S. Cl. 370—48 **2 Claims**



1. Apparatus for communicating a selected binary-coded message comprising

a marker signal generator for producing recurrent time-spaced marker signals each in the form of a time-controlled burst of one audio frequency,

means operatively connected to said marker-signal generator for defining, in each of the time-spans between successive marker signals, a predetermined plurality of successive code-signal-receptive time slots, and

a code-signal generator operatively connected to said marker-signal generator and to said defining means for placing, in each such plurality of time slots, a selected pattern of code signals, with each code signal occupying a different time slot and taking the form of a time-controlled burst of another audio frequency, and with the arrangement of presences and absences of code signals in each such plurality of time slots forming the selected binary-coded message.

4,196,312

ACCUMULATION LIVE ROLLER CONVEYOR

David A. DeGood, Hudsonville, and David K. Stevens, Jenison, both of Mich., assignors to David A. DeGood, Hudsonville, Mich.

Continuation-in-part of Ser. No. 768,980, Feb. 16, 1977. This application Apr. 3, 1978, Ser. No. 892,835

Int. Cl.[2] B65G *13/06*

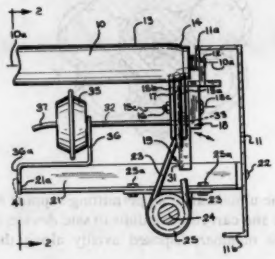
U.S. Cl. 198—781 **16 Claims**

8. In a live roller conveyor apparatus including a frame and a plurality of rollers mounted on longitudinal axes at both ends on the frame in spaced relation so as to define a pass line on surfaces of the rollers for transport of articles by the rollers the improvement which comprises:

(a) a support bar positioned along the pass line on the frame adjacent the axes of multiple rollers, the support bar being arcuately pivotable about an axis parallel to the pass line towards and away from the axes of the rollers;

(b) multiple drive wheels each provided with a radial frictional drive surface and rotatably mounted on shafts in spaced aligned relation on the support bar such that the frictional drive surfaces on each drive wheel each come into contact all at the same time with two roller surfaces upon arcuately pivoting the support bar and the drive wheels towards the axes of the rollers;

(c) means for powering the drive wheels; and



(d) means including a trigger mounted on the pass line which activates a powered means for driving a linkage mounted on the frame and connected to the support bar wherein linkage pivots the support bar so that the frictional drive surfaces move into and out of contact with the surfaces of the rollers.

4,196,313

POLYPHONIC SOUND SYSTEM

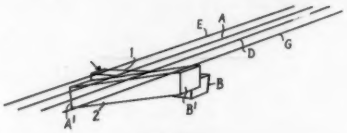
Robert M. Griffiths, 96 Dawes Rd., London SW67EJ, England

Filed Nov. 3, 1977, Ser. No. 848,040

Claims priority, application United Kingdom, Nov. 3, 1976, 45818/76

Int. Cl.[2] G10H *3/08;* **H04R** *5/00*

U.S. Cl. 179—1 M **2 Claims**



1. In the combination of a stringed musical instrument with sound reproducing means, said sound reproducing means comprising:

(a) first and second pick-up means mounted beneath the strings of said instrument in operative association therewith

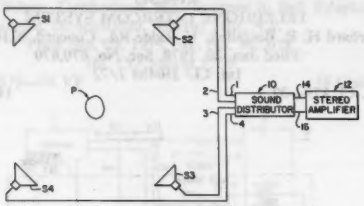
(b) first and second sound reproduction means, and

(c) means connecting both said first and second pick-up means to said first and second sound reproduction means, the improvement comprising that each pick-up means is so disposed in its operative relationship to said strings that it has a differential sensitivity to the sounds generated by said strings, the arrangement of said pick-up means being such that one pick-up means has a maximum sensitivity to a particular string and the other said pick-up means has a minimum sensitivity to the same said string, the sensitivities of said pick-up means varying for the remainder of the said strings in a complementary fashion whereby in operation the sounds of the strings when reproduced by said first and second reproduction means are spread across an aural spectrum in a relationship which corresponds to the spatial relationship between said strings themselves.

4,196,314
SOUND DISTRIBUTING SYSTEM IMPROVEMENTS

Henry Guillory, 186 Day St., San Francisco, Calif. 94131

Filed Aug. 8, 1978, Ser. No. 932,092
Int. Cl.[2] H04R 5/00
U.S. Cl. 179—1 G 5 Claims



1. Apparatus for sequentially distributing a first and a second audio electrical signal to a plurality of sound-reproducing elements arranged to define a listening area, the apparatus comprising:

means for generating a digital pulse train;

counter means responsive to the digital pulse train for cyclically assuming a number of distinct digital states, there being at least one distinct digital state for each sound-reproducing element;

decode means responsive to the counter means for decoding each distinct digital state assumed by said counter means and for generating therefrom a plurality of output signals, there being one output signal corresponding to each distinct digital state assumed by said counter means;

switch means responsive to said output signals generated by said decode means for communicating the audio electrical signal to a selected, adjacent pair of the sound-reproducing elements for each distinct state assumed by the counter means, said switch means including a pair of transistors associated with each one of said sound-reproducing elements, each transistor having an emitter lead electrically connected to the emitter lead of the other transistor of the pair and to the associated sound-reproducing element, a collector lead, and a base lead coupled to said decoder means and responsive thereto to cause said transistor to conduct upon receipt of one of said output signals, the collector leads of said transistor pair being adapted to respectively receive said first and second audio electrical signals;

whereby as each one of the states is assumed by the counter means the first and second audio electrical signals are communicated to selected, adjacent pairs of the sound-reproducing elements in a serial manner to simulate sound rotation about the listening area.

4,196,315
DIGITAL MULTIPLEXING AND DEMULTIPLEXING SYSTEM

Patrick E. Boutmy; Michel Stutzmann, and Jean G. Walraet, all of Lannion, France, assignors to Societe Anonyme de Telecommunications, Paris, France

Filed Jul. 21, 1978, Ser. No. 926,960
Claims priority, application France, Jul. 26, 1977, 77 22880
Int. Cl.[2] H04J 3/06
U.S. Cl. 370—102 1 Claim

1. A digital multiplexing and demultiplexing system in which incoming plesiosynchronous signals are time multiplexed bit by bit into synchronous intermediate rate signals and a number of incoming plesiosynchronous intermediate rate signals are time multiplexed bit by bit with said synchronous intermediate rate signals into an outgoing signal high rate signal having a high rate which is a multiple of the originating intermediate rates, said plesiosynchronous low rate signals and said plesiosynchronous intermediate rate signals comprising only information bits and said synchronous intermediate rate signals and said high rate signal comprising information bits, stuffing bits and filling bits including framing bits, service bits and stuffing indication bits arranged in predetermined bit positions in frames, the system comprising;

(a) first means for storing and stuffing said incoming plesiosynchronous low rate component signals in dependence upon the difference between their own originating respective low rates and said predetermined low rate;

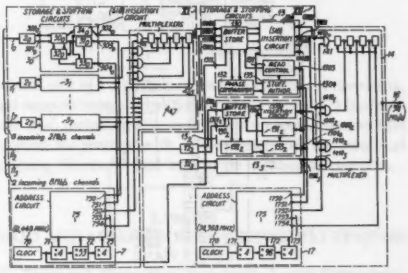
(b) multiplexing means receiving and multiplexing said predetermined low rate stuffed signals into frames of said synchronous intermediate rate signals;

(c) means for filling into said synchronous intermediate rate signals a first number of filling bits of predetermined addresses of the frame forming synchronous intermediate rate filled signals;

(d) second means for storing said synchronous intermediate rate filled signals and third means for storing said incoming plesiosynchronous intermediate rate component signals;

(e) second means for stuffing said stored synchronous intermediate rate filled signals and third means for stuffing said stored plesiosynchronous intermediate rate component signals in dependence upon the difference between the originating intermediate rates and said predetermined intermediate rate;

(f) multiplexing means connected to said second and third stuffing means for multiplexing the predetermined inter-



mediate rate stuffed signals into frames of the high rate signals;

(g) means for filling into said high rate signal a second number of filling bits in bit positions of predetermined addresses of the frame thereof and thereby forming a high rate filled signals;

(h) first demultiplexing means receiving and demultiplexing said high rate filled signal into first and second numbers of synchronous intermediate rate signals;

(i) first storing and unstuffing means for storing the first number of synchronous intermediate rate demultiplexed signals and for extracting filling bits of predetermined addresses of high rate signal frame and for unstuffing into synchronous intermediate rate filled signals;

(j) second storing and unstuffing means for storing the second number of synchronous intermediate rate demultiplexed signals for extracting filling bits of predetermined addresses of high rate signal frames and for unstuffing into outgoing plesiosynchonous intermediate rate component signals;

(k) second demultiplexing means receiving and demultiplexing said synchronous intermediate rate filled signals read out of said first storing and unstuffing means into synchronous low rate singnals;

(l) third storing and unstuffing means for storing synchronous low rate signals and for extracting filling bits of predetermined addresses of intermediate rate signal

frames and for unstuffing into outgoing plesiosynchronous low rate component signals;

(m) interchangeable assembling means for replacing a group of incoming and outgoing plesiosynchronous low rate component signals by two incoming and outgoing plesiosynchonous intermediate rate component signals in said high rate filled signal; and

(n) said assembling means including separate storing means for incoming low rate signals and for intermediate rate signals and further including interconnecting mean between said separate storing mean and said first, second and third storing and unstuffing means.

4,196,316

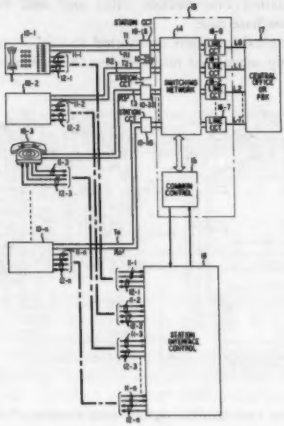
PROGRAM CONTROLLED COMMUNICATION SYSTEM HAVING INDIVIDUALLY REARRANGEABLE LINE SELECTION

James R. McEowen; Robert M. Smith, both of Holmdel, and Tse L. Wang, Matawan, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation-in-part of Ser. No. 832,888, Sep. 13, 1977, abandoned. This application Sep. 18, 1978, Ser. No. 943,524

Int. Cl.[2] H04M *3/42;* H04Q *3/54*

U.S. Cl. 179—18 ES **8 Claims**



1. An electronic processor controlled communication system arranged for interconnecting a number of stations with a number of telephone lines where each station has access by momentary operation of one of a set of pickup buttons to a selected one of said lines, the combination comprising:

a memory for providing system control information to said processor, said system control information including station and line correlation data,

a station control circuit associated with each station, each such station control circuit including a set of manually operable two-position switches, each switch having a first position for generating a logic 1 output and a second position for generating a logic 0 output, each said switch set divided into subgroups such that a first subgroup of switches contains the number of switches necessary to establish in binary format the logic output equivalent of the highest number of lines served by the memory and a second subgroup of switches contains one switch for each line served by the memory,

means for sequentially scanning said station control circuits to obtain the logic outputs of said switch subgroups, and

means for providing said obtained logic outputs to said memory such that the binary coded logic output of said first subgroup of switches is operable to establish an association between a predetermined one of said pickup buttons at said associated station set and the line identified by said obtained binary coded logic output, and such that said obtained logic output of said second subgroup of switches is operable to establish which other ones of said lines are associated with other ones of said pickup buttons at said associated station set.

4,196,317

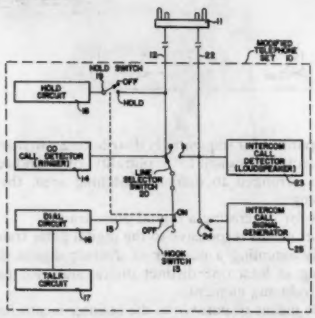
TELEPHONE INTERCOM SYSTEM

Everhard H. B. Bartelink, 15 Ridge Rd., Concord, N.H. 03301

Filed Jan. 20, 1978, Ser. No. 870,870

Int. Cl.[2] H04M *1/72*

U.S. Cl. 179—37 **14 Claims**



1. In a subscriber telephone system of the type including a first electrical circuit comprising a pair of conductors on the subscriber's premises connectable to each of a plurality of telephone sets on the premises, each of the telephone sets including a dial circuit for transmitting dial pulse signals over the first circuit and a talk circuit for transmitting and receiving voice signals over the first circuit, the first circuit being connected to a telephone company line extending from a central office for carrying central office calls to and from the subscriber's premises, apparatus for enabling at least two of the telephone sets on the premises to be used for intercom calls as well as central office calls, said apparatus comprising:

A. a second electrical circuit for carrying intercom calls comprising a pair of conductors on the premises connectable to each of the telephone sets to be used for intercom and central office calls;

B. means at the premises for supplying power to said second circuit to enable the transmission of voice signals thereover;

C. line selection means associated with each of the telephone sets to be used for intercom and central office calls for switching the talk circuit therein between the first circuit and said second circuit;

D. intercom signalling means separate from said dial circuit associated with each of the telephone sets to be used for intercom and central office calls and connectable to said second circuit, said intercom signalling means including an intercom call alerting signal generator for generating an intercom call alerting signal in an audio frequency range and at a level substantially above that of the voice signals transmitted over said second circuit and an intercom switch for activating said intercom call alerting signal generator to transmit the intercom call alerting signal over said second circuit; and

E. intercom signal detecting means associated with each of the telephone sets to be used for intercom and central office calls and connectable to said second circuit, each of said intercom signal detecting means including means responsive to the presence of the audio frequency intercom call alerting signal on said second circuit for providing provide an indication that an intercom call is desired and threshold means for selectively attenuating the rela-

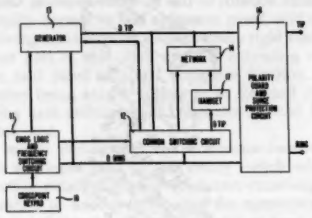
tively low level voice signals on said second circuit in advance of said indication providing means.

4,196,318

ELECTRONICALLY-SWITCHED MULTIFREQUENCY GENERATOR FOR PROVIDING TONE SIGNALING

Dale H. Nelson, Cumberland, Ind., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 29, 1978, Ser. No. 947,019
Int. Cl.[2] H04M *1/50*
U.S. Cl. 179—84 VF **18 Claims**



1. A multifrequency generator for providing tone signaling comprising:

a control circuit **(11)**;

a tone generator **(13)** for providing the tone signaling in response to control signals provided by the control circuit; and

a common switching circuit **(12)** comprising a series of solid-state switching devices **(405, 409, 410, 508,** and **518)**, each of the solid-state switching devices being controlled by the control circuit characterized in that

the common switching circuit includes at least one current source **(505-507)** that provides a high impedance activation signal to the solid-state switching devices.

4,196,319

VEHICULAR TELEPHONE STATION SET SECURITY PEDESTAL

Frank V. Gates, Succasunna, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 8, 1978, Ser. No. 967,734
Int. Cl.[2] H04M *1/04*
U.S. Cl. 179—146 R **10 Claims**

1. A mount of the type which supports a telephone station set **(23)** for convenient operation by a user from a substantially planar portion of a surface **(45)** in a vehicle, the mount being characterized in that a base **(11)** is adapted for mounting on said planar portion and provides an interior cavity **(29)** to serve as a receptacle for said set, said base has a port **(28)** communicating with said interior cavity for insertion and removal of said set from said interior cavity, and locking means **(31)** is associated with said port for assuming a predetermined position to prevent removal of said net from said interior cavity of said base when said set is not being operated by the user,

connecting means includes a connector plate **(19)** adapted to mate with said set to provide both mechanical and electrical coupling for said set, and

support means **(12, 13, 16, 17** and **18)** mechanically locates said connector plate in a predetermined position, said support means is disposed between the exterior surface of said base and said connecting means and serves to provide the mechanical support and to complete the electrical connection for said set for operation by the user.

8. A mount of the type for at least supporting the control unit **(23)** of a mobile telephone station set for operation by a user from a substantially planar region of a surface **(45)** in a vehicle, the mount being characterized by a base **(11)** having an interior cavity **(29)** and a port **(28)** communicating therewith including locking means **(31)**, said base serving to provide a secure stowage receptacle for said control unit when not being operated by inserting therein through said port and setting said locking means to prevent its removal, and

adjustable support means **(13** and **16-19)** for positioning said

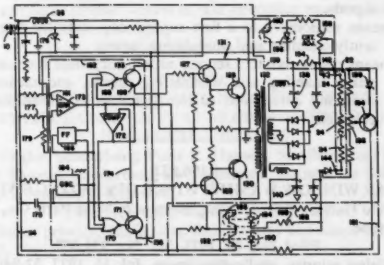
control unit in a convenient position capable of operation, said support means extending from the exterior **(12)** of said base and including disengagable connecting means **(19)** adapted for mating with said control unit for electrical coupling therewith and to provide mechanical support.

4,196,320

METHOD AND MEANS FOR POWERING TELEPHONE SPAN LINES

Todd V. Townsend, Reno, Nev., assignor to Lynch Communication Systems, Inc., Reno, Nev.

Filed Jan. 3, 1978, Ser. No. 866,696
Int. Cl.[2] H04B *3/44*
U.S. Cl. 179—170 J **5 Claims**



1. A non-dissipative power supply for supplying a constant current to the D.C. loop of a communication line regardless of the resistance characteristics of said loop, comprising:

(a) inverter means including a pair of switching means alternatively energized for variable periods of time, of variable length and transformer means for producing an output voltage generally proportional to the length of said variable periods of time;

(b) means arranged to apply to said D.C. loop of said com-

munication line a D.C. voltage generally proportional to said output voltage;

(c) duty-cycle control means arranged to vary the length of said periods of time in accordance with a control signal representative of the current in said D.C. loop;

(d) means for generating said control signal, said means including resistive means connected in series with said D.C. loop, and means connected in parallel with said resistive means for outputting said control signal as a function of the current flowing through said resistive means, said means for outputting said control signal comprising second resistive means and a light emitting diode connected in series with said second resistive means, the resistance of said second resistive means controlling the amount of current flowing through said diode; and

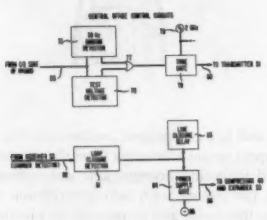
(e) means applying said control signal to said duty-cycle control means so as to maintain said D.C. loop current substantially constant.

4,196,321

LOOPBACK TEST SYSTEM

Barry S. Bosik, Parsippany, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 29, 1978, Ser. No. 974,384
Int. Cl.[2] H04B *3/46;* **H04J** *3/14*
U.S. Cl. 179—175.2 R **13 Claims**



1. A subscriber loop carrier system for deriving a plurality of telephone subscriber transmission channels on a single transmission facility, said system including a plurality of diverse carrier signal sources for differentiating said transmission channels,

characterized by

a supervisory signal source,

means for selectively modulating signals from said supervisory signal source onto each one of said diverse carrier signals,

means responsive to a first supervisory state for intermittently enabling said modulating means,

means responsive to a second supervisory state for continuously enabling said modulating means, and means for detecting a received carrier signal in said transmission channels.

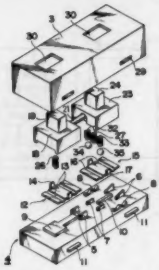
4,196,322

REAR WINDOW WASHER WIPER OPERATING SWITCH

Yoshio Hattori, Tokyo, Japan, assignor to Niles Parts Co., Ltd., Japan

Filed Jun. 30, 1978, Ser. No. 921,089
Claims priority, application Japan, Jul. 15, 1977, 52-94041
Int. Cl.[2] H01H *9/00, 15/00*
U.S. Cl. 200—5 R **5 Claims**

1. A rear window washer wiper operating switch comprising a first slide switch for controlling a washer circuit having a movable member slideable between first and second positions and being automatically reset from said second position to said first position and a second slide switch for controlling a wiper circuit having a movable member slideable between first and second positions working in cooperation with said first slide switch to be slid from its first position to its second position when the movable member of said first slide switch is slid from its first position to its second position, the movable member of said second slide switch being slideable from its first position to its second position independently of said first slide switch and having means to retain the movable member of said second slide switch in its second position, a case containing said first slide switch and second slide switches, said first and second slide switches each having an operating piece extending through a front wall of said casing for sliding the movable member thereof between its first and second positions.



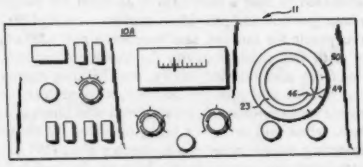
2. A rear window washer wiper operating switch according to claim **1** wherein said first slide switch comprises a first contact mounted on a base board fixed to said case, a second contact piece mounted on the movable member of said first switch making contact and separating from said first contact, the movable member of said first switch having a projection to engage the movable member of said second slide switch for sliding the movable member of said second slide switch from its first position to its second position when the movable member of said first slide switch is slid from its first position to its second position and a spring for automatically resetting the movable member of said first slide switch.

4,196,323

COMBINED INPUT CONNECTOR AND LEAD SELECTION SWITCH FOR ELECTRICAL SIGNAL PROCESSING APPARATUS

Joseph D. Napoli, Billerica, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Sep. 16, 1977, Ser. No. 833,933
Int. Cl.[2] H01H *9/02*
U.S. Cl. 200—51.04 **17 Claims**



1. For electrical signal input to signal processing apparatus having a housing including a panel, a combined input connector and lead selection switch adapted for connection with a first-half of a multi-contact connector for plural input signal leads, said combination being mountable in said apparatus housing at least partially in registry with an opening through said panel, and comprising:

a multi-position rotary switch having a plurality of input terminals, at least one output terminal and an input shaft, said switch input shaft being rotatable to plural discrete positions for respectively changing the connection between said switch input terminals and said at least one

switch output terminal, said switch being adapted to be substantially fixedly mounted in said apparatus housing;

a second half of said multi-contact connector adapted to removably receive said first half of said multi-contact connector for electrical connection with the plural input signal leads;

means for electrically connecting the contacts of said second half of said multi-contact connector with respective ones of said switch input terminals;

connector-receiving means mounted in said apparatus housing in registry with the opening in said apparatus panel for retainedly housing said second half of said multi-contact connector and for detented rotation to plural selected angular positions about an axis of rotation extending substantially normal to said apparatus panel, said connector-receiving means having a substantially rigid shaft member, at last part ot said shaft member extending rearwardly from said panel into said apparatus housing, said shaft member being axially hollow at its forward end and retaining said multi-contact connector second half therewithin; and

drive means connecting said connector-receiving means with said input shaft of said rotary switch whereby said selective rotation of said connector-receiving means is operative to selectively change the connection between said switch input terminals and said at least one switch output terminal.

4,196,324

ROTARY SWITCH

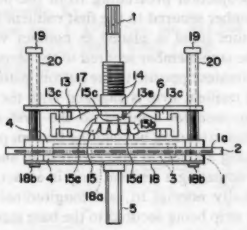
Tatsuo Kojima, Kyoto, and Kiminori Yamauchi, Osaka, both of Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan

Filed Feb. 15, 1978, Ser. No. 878,167

Claims priority, application Japan, Feb. 17, 1977, 52-18646[U]; Mar. 2, 1977, 52-27892[U]; Mar. 19, 1977, 52-33952[U]; May 10, 1977, 52-54083

Int. Cl.[2] H01H *19/08*

U.S. Cl. 200—11 DA **12 Claims**



1. A rotary switch comprising: a first insulating member of electrically insulating material; a stationary electrode having a plurality of arcuate terminal portions extending in concentric relation to each other in a circumferential direction around a center of said first insulating member and embedded within said first insulating member, said first insulating member having a plurality of radially oriented through openings around the center and extending through said first insulating member, said arcuate terminal portions having free ends extending laterally into said through openings with said free ends being bent in the direction in which said through openings extend through said first insulating member and projecting beyond at least one surface of said first insulating member to constitute stationary contacts for said stationary electrode; a rotary shaft rotatably mounted on said first insulating member with the longitudinal axis thereof corresponding to said center; detent means operatively associated with said shaft for controlling said shaft for intermittent rotation; and at least one rotor member having a second electrically insulating member mounted on said shaft for rotation therewith and at least one electrode on a surface of said rotor member facing said at least one surface of said first insulating member and having concentric portions contacting said stationary contacts of at least two of said arcuate terminal portions in at least one rotational position of said rotary shaft and connecting said two arcuate terminal portions to complete a circuit therebetween.

4,196,325

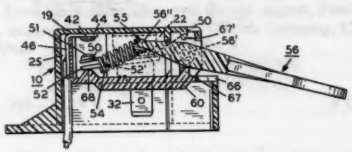
SUMP PUMP SWITCH

Stanley A. Povilaitis, Bristol, Conn., assignor to Crouse-Hinds Arrow Hart Inc., Hartford, Conn.

Filed Mar. 14, 1977, Ser. No. 777,088

Int. Cl.[2] H01H *13/28*

U.S. Cl. 200—67 A **24 Claims**



1. In an electric switch,

a housing,

fixed and movable contact means mounted in said housing in position for engagement and disengagement of said fixed contact means by said movable contact means,

electrically conductive terminal means mounted in said housing,

said movable contact means pivotally engaging and being supported swingably on said terminal means.

a movable insulation member to which said movable contact means is unitarily connected,

said terminal means having two spaced parts,

said movable contact means extending between said parts and having extensions extending oppositely therefrom and engaging said parts for pivotally supporting said movable contact means,

said movable contact being resilient and having means bent therefrom in position to engage said insulating member as said movable and fixed contact means engage whereby said bent means enhances absorption by said movable contact means of the kinetic energy incident to switch closing movement,

and over-center switch-operating means movable between two positions and engaging said insulation member for causing engagement and disengagement of said movable and fixed contact means as said operating means is moved to and fro over-center.

4,196,326

PRESSURE RESPONSIVE ELECTRIC SWITCH, PARTICULARLY AN EVAPORATOR THERMOSTAT FOR REFRIGERATORS

Jes Vogler, Sonderborg; Peter R. Hanson, Nordborg, and Niels P. Thorsen, Sonderborg, all of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed Oct. 12, 1978, Ser. No. 950,624

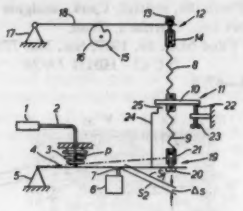
Claims priority, application Fed. Rep. of Germany, Oct. 17, 1977, 2746627

Int. Cl.[2] H01H *35/24*

U.S. Cl. 200—81 R **3 Claims**

1. A pressure responsive electric switch assembly, comprising, an actuating element mounted for displacement between first and second extreme positions, switch means actuated by said actuating element having on and off states corresponding to said positions, pressure responsive motor means responsive to applied pressures biasing said actuating element in the one direction, displacement control means for controlling the displacement of said actuating element during a constantly in-

creasing motive pressure applied to said motor means to provide a substantially null displacement for a substantial intermediate pressure range between upper and lower pressure ranges, said displacement control means including first and second series connected spring means for biasing said actuating element in the off direction and a coupling member connecting said first and second spring means, anchor means for holding one end of said first spring means in a relatively fixed position, means attaching one end of said second spring means to said



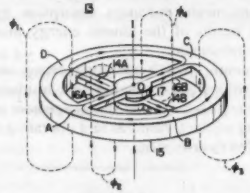
actuating element, stationary first abutment means for arresting movement of said coupling member after a predetermined displacement at a position corresponding to a predetermined lower pressure applied to said motor means, second abutment means attached to and carried by said actuating element for engagement with said coupling member when said applied pressure is lower than a predetermined higher pressure applied to said motor means, said first and second abutment means being effective to prevent said first and second spring means from deforming during said intermediate pressure range.

4,196,327

VACUUM INTERRUPTER

Yukio Kurosawa; Yukio Kawakubo, and Hiroyuki Sugawara, all of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

Filed Dec. 5, 1977, Ser. No. 857,706
Claims priority, application Japan, Dec. 6, 1976, 51/14558
Int. Cl.[2] H01H *33/66*
U.S. Cl. 200—144 B **13 Claims**



1. A vacuum interrupter comprising a vacuum vessel, a pair of conductor rods extending exteriorly of the vacuum vessel, and a pair of electrode assemblies respectively connected to the conductor rods within the vacuum vessel, each of said electrode assemblies having a main electrode from which arc may be ignited, at least one of these main electrodes being electrically connected with a coil electrode for passing a current coming thereinto from an associated one of the conductor rods in such a manner that the current induces axial magnetic flux, wherein said coil electrode comprises:

(a) a plurality of first arms connected to the conductor rod and passing the current radially of the conductor rod;

(b) an annular branching section connected to the first arms and branching the current coming from the first arms circumferentially of the conductor rod in reverse directions;

(c) a plurality of second arms for combining the branched currents and passing the combined current toward the conductor rod; and

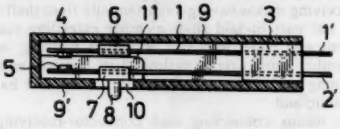
(d) a spacer interposed between the first and second arms for preventing short-circuiting between the first and second arms.

4,196,328

ELECTRIC SWITCH

Kazuhiro Ishikawa, Tomioka, Japan, assignor to Iizuka Electric Industry Company Limited, Tomioka, Japan

Filed Aug. 1, 1978, Ser. No. 930,129
Claims priority, application Japan, Mar. 18, 1978, 53/34094
Int. Cl.[2] H01H *1/26*
U.S. Cl. 200—246 **4 Claims**



1. An electric switch comprising:

a base member made of electrically insulating material;

at least two resilient strips made of electrically conductive material, each having one end secured to the base member and each of said strips having contact points secured to opposite surfaces adjacent to their free ends;

at least two stop members made of electrically insulating material and secured to the resilient strips, respectively;

a supporting member coupled with said base member for supporting the resilient strips at said member in such a manner that the strips extend in their longitudinal direction substantially in parallel with each other at a given distance, and wherein said supporting member comprises a bottom plate made of electrically insulating material and extending substantially in parallel with the resilient strips and a projection protruding from the bottom plate, the stop member secured to the first resilient strip adjacent to the bottom plate is placed in contact with the bottom plate, the stop member secured to the second resilient strip which situates opposite to the bottom plate with respect to the first resilient strip is engaged with the projection, and said stop member secured to the first strip includes a protrusion extending beyond the bottom plate, the driving force being applied to said protrusion; and

means for actuating a resilient strip in an actuating direction substantially normal to said longitudinal direction, said resilient strip being secured to the base member so that the strip is held in position by an engagement of the stop member and the supporting member which storing a resilient force acting in a direction opposite to said actuating direction.

4,196,329

SITU PROCESSING OF ORGANIC ORE BODIES

Howard J. Rowland, Newton, and Joseph T. deBettencourt, West Newton, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 682,698, May 3, 1976, abandoned, Division of Ser. No. 838,265, Sep. 30, 1977, Pat. No. 4,135,579. This application Sep. 30, 1977, Ser. No. 838,264
Int. Cl.[2] H05B *9/04*; E21B *43/24*
U.S. Cl. 219—10.81 **10 Claims**

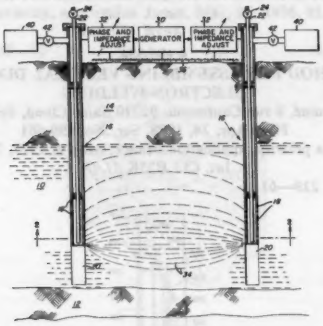
1. In combination:

a plurality of conductive members having portions thereof positioned in a body of oil shale beneath an overburden;

means comprising a transmission line system extending from an electric power source substantially through said overburden and electrically coupled to said conductive mem-

bers for producing an electric field potential between said conductive members;

said electric field potential comprising a component which varies at a frequency in the range between 100 kilohertz to 100 megahertz with different phases of said electric field potential component being supplied to adjacent conductive members in said oil shale body;



means for shielding a substantial portion of said overburden above said conductive members from said electric field potential;

the average spacing of said conductors being less than a tenth wavelength of said frequency in said body; and

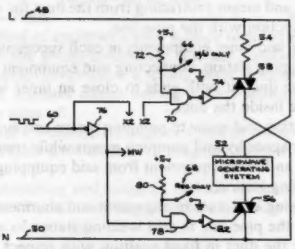
the intensity of said electric field potential producing fracturing in regions of said body by producing substantial thermal gradients in said body.

4,196,330

COMBINATION OVEN FULLY UTILIZING THE CURRENT-SUPPLYING CAPABILITY OF A POWER SOURCE

Thomas R. Payne, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Jun. 1, 1978, Ser. No. 911,544
Int. Cl.[2] H05B *9/00, 11/00*
U.S. Cl. 219—10.55 B **16 Claims**



1. A cooking oven which has both microwave and electrical resistance heating means, which is adapted for operation from a power source of limited current-supplying capability insufficient to concurrently supply both heating means at their respective fully rated power levels, and which comprises:

said microwave heating means being a microwave energy generating system requiring less than all of the available current when operated at its full rated power level;

said resistance heating means being an electrical resistance heating element requiring substantially all of the available current when operated at its full rated power level;

means for successively energizing said microwave energy generating system and said electrical resistance heating element from the power source at their respective full rated power levels; and

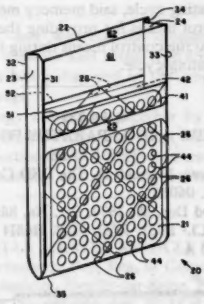
means for periodically fully energizing said electrical resistance heating element from the power source in short pulses when said microwave energy generating system is energized at its full rated power level, the pulses being of such frequency and duration that the resultant RMS current obtained by integrating the instantaneous current over at least a period including one pulse and one interval between pulses when added to the current drawn from the source to operate said microwave energy generating system at its full rated power level is no greater than the power source current-supplying capability.

4,196,331

MICROWAVE ENERGY COOKING BAG

Algis S. Leveckis, Ludlow, Ky., and Gerald August, Palo Alto, Calif., assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jul. 17, 1978, Ser. No. 925,598
Int. Cl.[2] H05B *9/06;* **A21D** *10/02*
U.S. Cl. 219—10.55 E **9 Claims**



1. In an improved microwave energy cooking bag having microwave energy moderating wall portions which wall portions include electrically conductive sheet material which is substantially fully perforated with a multiplicity of apertures of predetermined sizes with respect to a predetermined nominal frequency of microwave energy and which sheet material has some face-to-face areas, and which bag includes means for substantially obviating electrical arcing intermediate adjacent said face-to-face areas of said electrically conductive sheet material, the improvement wherein said means comprises a relatively thick, relatively low density batt of a relatively low dielectric loss factor, relative high electric field strength electrically insulative material disposed intermediate said adjacent face-to-face areas of said electrically conductive sheet material.

4,196,332

CONTROLLED HEATING MICROWAVE OVENS

Alejandro MacKay B, Santiago, Chile; Wayne R. Tinga, and Walter A. G. Voss, both of Edmonton, Canada, assignors to Canadian Patents and Development Limited, Ottawa, Canada

Filed May 1, 1978, Ser. No. 901,350
Claims priority, application Canada, Feb. 9, 1978, 296944
Int. Cl.[2] H05B *9/06*
U.S. Cl. 219—10.55 B **9 Claims**

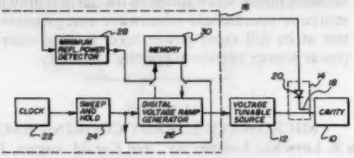
1. A microwave oven comprising:

multimode cavity means for receiving a load to be heated;

a controllable frequency microwave power source coupled to said multimode cavity means for providing power to said multimode cavity means, the frequency of said microwave power source being controllable within a predetermined frequency bandwidth;

detector means for providing a detector signal representative of the power absorption of the load as a function of the power source frequency when the cavity means is energized;

control means for controlling the frequency microwave power source during an operating cycle to sweep through the frequencies in the predetermined frequency bandwidth during a first portion of the operating cycle and to



operate in a sequence of preferred frequencies during a second portion of the operating cycle; and

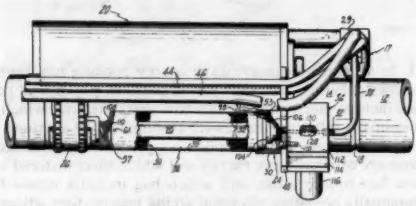
memory means coupled to the detector means for receiving the detector signal and for storing representations of the preferred frequencies determined during the first portion of the operating cycle, said memory means being coupled to the control means for providing the frequency representations to the control means during the second portion of the operating cycle.

4,196,333

WELDING WIRE AND APPARATUS FOR DISPENSING THE SAME

John O. Emmerson, Magnatech, The DSD Co., Bradley Pk., E. Granby, Conn. 06026

Filed Dec. 29, 1977, Ser. No. 865,514
Int. Cl.[2] B23K *9/12, 31/6;* **B65H** *49/18*
U.S. Cl. 219—60 A **11 Claims**



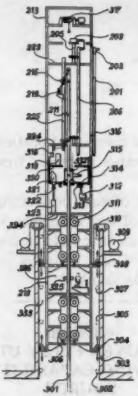
11. An orbital welding apparatus for butt welding abutting tubular workpiece members along an annular weld line, non-consumable weld electrode means spaced adjacent the weld line and operative for establishing an electrical arc therebetween for establishing a weld puddle at the weld line, means for effecting orbital motion of the electrode means relative to the tubular workpiece members adjacent to the weld line, a non-rotatable storage magazine, an aiming conduit having an aiming nozzle at the end thereof for feeding welding wire from the storage magazine to the weld puddle, feed means to propel the welding wire through the aiming conduit, said welding wire comprising a solid monofilament welding wire helically coiled into a plurality of convolutions of uniform diameter to form a filler wire, and said magazine being an elongated tubular magazine mounted for orbital movement with said electrode and extending substantially parallel to the tubular workpiece members adjacent thereto, a spool rotatably mounted by said storage magazine, said filler wire being helically wound around said spool to form an elongated multi-layered helical coil concentrically within said storage chamber, said tubular magazine having a centrally apertured breech block at one end thereof to provide an exit passage for said filler wire, means on said magazine providing a friction surface formed of a plurality of spaced projecting loops of resilient material engageable with said spool to control the breakaway torque thereof, and a biasing means to set said torque, said breech being mounted in alignment with said feed means which grip said filler wire to push the same through said aiming conduit.

4,196,334

METHOD FOR ASSEMBLING VERTICAL DUCTS BY ELECTRON-WELDING

Paul Thomé, 8 rue Coutureau, 92210 Saint-Cloud, France

Filed Apr. 24, 1978, Ser. No. 899,681
Claims priority, application France, May 2, 1977, 77 13162
Int. Cl.[2] B23K *31/06*
U.S. Cl. 219—61 **2 Claims**



1. A method for assembling successive ducts end to end with a pipe-line constituted by the assembled ducts comprising:

providing inner equipments for said ducts each comprising means for vacuum-tight connection with the inside of a duct and means protruding from the duct for vacuum tight connection with the pipe-line,

placing said inner equipments in each successive duct in an equipping station, connecting said equipment to the inside of the duct at both ends to close an inner vacuum tight space inside the duct,

connecting said space to pumping means and evacuating said inner space by said pumping means while transferring said duct and inner equipment from said equipping station to a welding station,

positioning said duct in alignment and abutment end to end with the pipe-line in said welding station,

locking the duct in fixed position with respect to the pipe-line, sealingly connecting said equipment with the pipe-line inside the pipe-line, and sealingly connecting a vacuum tight welding chamber of a rotative welding apparatus with the duct and the pipe-line outside their abutting ends,

welding said abutting ends under vacuum using said welding apparatus,

unlocking and unsealing the inner equipment from the duct and pipe-line, disconnecting the welding chamber, and letting the pipe-line fall down by one duct length,

returning the inner equipment from said duct back to the equipping station,

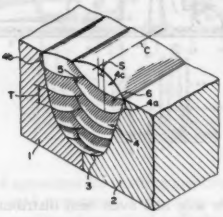
and repeating the operating sequence with each successive duct.

4,196,335

SUBMERGED ARC WELDING PROCESS

Masahiko Ikeda; Mutsuo Nakanishi, and Norio Katsumoto, all of Amagasaki, Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 781,308, Mar. 25, 1977, abandoned. This application May 19, 1978, Ser. No. 907,495
Claims priority, application Japan, Mar. 26, 1976, 51/33961
Int. Cl.² B23K 9/18
U.S. Cl. 219—73 **6 Claims**



1. A submerged arc welding process employing a flux having a basicity as defined by a formula $CaO+MgO/SiO_2$ in weight percentage of between about 1.5 and 3 and comprising the step of depositing a plurality of layers of weld metal under a welding current of from about 400 to 700 A and an arc voltage of from about 35 to 48 V, each of said layers having a thickness not greater than about 7 mm, so that the weld metal in an underlying layer is thermally affected by deposition of an adjacent overlying layer, and whereby recrystallization is effected in a substantial thickness of the underlying layer and the thermally unaffected portion of said underlying layer is less than about 2 mm thick.

4,196,336

METHOD OF HARD SURFACING A METAL OBJECT

Stanley B. Smoller, Southfield, and Gerald I. Frock, Detroit, both of Mich., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Oct. 20, 1977, Ser. No. 843,766
Int. Cl.² B23K 9/04
U.S. Cl. 219—76.15 **10 Claims**

1. The method of applying a hard surface to an object made of metal from the group comprising titanium, zirconium, gallium and tantalum, to produce a strong, light, corrosion resistant, abrasion resistant object having a hard smooth surface including the steps of:

(a) providing a welding rod made of a tube of the same metal as said object and filled with tungsten carbide powder; and

(b) weld depositing said tungsten carbide on the surface of said object by arc welding with said welding rod in an envelope of inert gas.

4,196,337

METHOD OF FABRICATING A TORQUE SENSOR

Charles S. Jewett, Lyme, and Harry L. Ruzicka, Easton, both of Conn., assignors to Avco Corporation, Stratford, Conn.

Filed Jun. 23, 1978, Ser. No. 918,565
Int. Cl.² B23K 9/00
U.S. Cl. 219—121 EM **8 Claims**

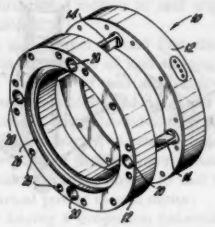
1. A method of fabricating a torque sensor to be coupled between an engine and an absorption dynamometer for use in measuring the torque output of the engine comprising the steps of:

fabricating two identical, stainless steel cylindrical rings, each having a generally rectangular cross-section;

simultaneously drilling a plurality of spaced holes in each ring extending parallel to the longitudinal axis thereof, such that the holes in one ring are aligned with the holes in the other ring;

fabricating a plurality of elongated, cylindrical beams corresponding to the plurality of holes in the rings, with the diameter of said beams substantially corresponding to the diameter of the holes in the rings;

assembling said rings and beams such that the rings are disposed in spaced relationship and have their longitudinal



axes colinear, and wherein the elongated cylindrical beams extend between said rings, with the opposite ends of said beams being disposed in the respective aligned holes of the rings;

securing said rings and beams together by electron beam welding to form an integral assembly; and

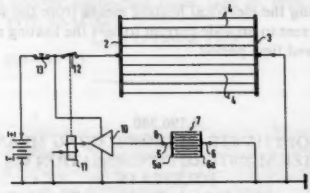
machining flat portions on the beams intermediate the length thereof for mounting of strain gauges thereon.

4,196,338

ELECTRICALLY HEATED VEHICLE WINDOW

Hans D. Edel, Bardenberg, Fed. Rep. of Germany, assignor to Saint-Gobain Industries, Neuilly-sur-Seine, France

Continuation of Ser. No. 465,164, Apr. 29, 1974, abandoned, and a continuation-in-part of Ser. No. 227,074, Feb. 17, 1972, abandoned. This application Aug. 11, 1977, Ser. No. 823,691
Int. Cl.² H05B 1/02; E06B 7/12; H05B 3/26
U.S. Cl. 219—203 **9 Claims**



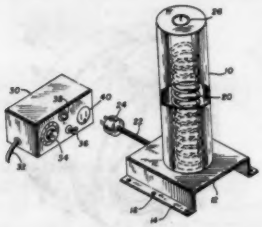
1. Apparatus for heating a glass window comprising, on the inside surface of a window, a plurality of spaced electrical resistance heating conductors connected between bus bars and at least one additional conductor on said surface closely spaced from an adjacent conductor on said surface, said conductors and bus bars being composed of the same paste of finely divided metallic particles suspended in a frit applied to the glass in a single step by a silk screen process and baked to the surface of the glass to define a baked, silk screen printed pattern on said surface, said apparatus further comprising a switch for controlled the application of a voltage between said bus bars, and control means including means for sensing the electrical resistance between said additional conductor and said adjacent conductor and means responsive to a decline in said electrical resistance due to the presence of moisture on said window surface between said additional conductor and said adjacent conductor for closing said switch to energize said heating conductors.

4,196,339

HEATING APPARATUS FOR FORMING LAMINATED PLASTIC

George J. Russo, 175 French Hill Rd., Wayne, N.J. 07470

Filed Apr. 25, 1978, Ser. No. 899,731
Int. Cl.[2] H05B *1/02*
U.S. Cl. 219—243 7 Claims



1. Apparatus for locally heating prior to the forming of a laminated plastic member, said apparatus including: (a) a relatively small rigid and heat conductive tubular member adapted for repeated heating to at least three hundred degrees Farenheit and resistant to cracking and abrasion; (b) a substantially rigid electrical heating means mounted within and along the length of the tubular member and fixed so as to be in close proximity to said tubular member and to heat said tubular member as electrical current is fed thereto and therethrough; (c) a base and means for securing said tubular member and said electrical heating means to this base in a substantially rigid manner; (d) means for placing and maintaining the electrical heating means within the tubular member so as to maintain a close proximity without bringing the current therethrough into conducting contact with the tubular member; (e) electrical circuit means for bringing electrical current from a supply source to the electrical heating means; (f) a variable means in the electric circuit means and disposed for adjustment so as to increase and decrease the heat developed in the electrical heating means, and (g) means for selectively connecting and disconnecting the electrical heating means from the source of electric current to provide current to heat the heating means at only a desired time period.

4,196,340

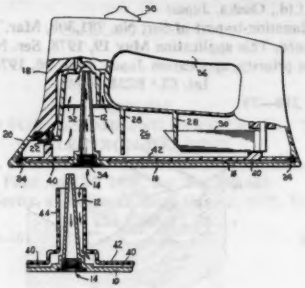
ELECTROLYTIC STEAM IRON HAVING MEANS TO MINIMIZE MOISTURE CONDENSATION ON THE SOLEPLATE

Ross M. Evans, Jr., Upland, Calif., and Donald J. Siebold, Naperville, Ill., assignors to General Electric Company, New York, N.Y.

Filed Mar. 9, 1978, Ser. No. 884,765
Int. Cl.[2] H05B *3/60;* D06F *75/110*
U.S. Cl. 219—245 5 Claims

1. A lightweight electrolytic steam iron having a soleplate with steam distributing means therefrom, a casing of electrically non-conducting material forming the walls of an internal water tank coextensive with and over the soleplate, spaced electrodes supported within said tank for immersion in the water contained therein generating steam from the water, an insulated steam conduit extending from the soleplate upwardly into said tank for directing saturated steam from said tank through said steam distributing means, the improvement comprising,

a thin chamber sealingly disposed between said tank and soleplate parallel and coextensive therewith, said chamber separating said tank and soleplate over substantially their entire facing surfaces, means for introducing tank generated steam to said thin chamber, whereby the soleplate is insulated from contact with said tank and said chamber



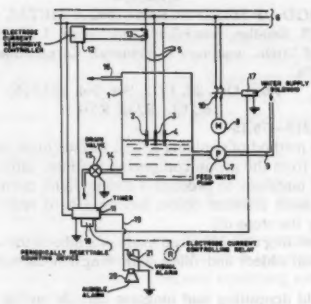
provides for sole and even heat distribution to the soleplate.

4,196,341

SYSTEM FOR MONITORING THE OPERATION OF AN ELECTRIC BOILER

Stanley A. Williams, 10 Durlston Rd., Poole, Dorset BH14 8PQ, England

Filed Jul. 22, 1977, Ser. No. 817,966
Claims priority, application United Kingdom, Jul. 22, 1976, 30569/76
Int. Cl.[2] H05B *1/02;* F22B *37/42;* H05B *3/60*
U.S. Cl. 219—295 6 Claims

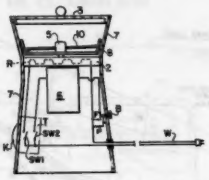


1. An electrode steam boiler comprising a water-receiving shell, water-heating electrodes supported in said shell so as to be at least partially immersed in the water to be heated, a first water-handling means for supplying feed water to said shell, control means including means responsive to the magnitude of current flowing to one of said electrodes for actuating said first water-handling means in response to said electrode current falling below a predetermined level to cause feed water to be supplied to said shell, a second water-handling means for withdrawing water from said shell and passing it to waste, said control means including means for actuating said second water-handling means in conjunction with actuation of said first water-handling means, means monitoring the number of actuations in a pre-set period of at least one of said water-handling means, and means responsive to said monitoring means for actuating a safety means when said number of actuations in said pre-set period exeeds a predetermined value.

4,196,342
HOUSEHOLD APPARATUS FOR THE ROASTING OF COFFEE IN SMALL QUANTITIES

Pierre Chailloux, Iteuil-Liguge, France, assignor to Marielle Touillet, Poitiers, France

Filed May 9, 1977, Ser. No. 795,075
Claims priority, application France, May 10, 1976, 76 13952
Int. Cl.[2] A47J 31/42
U.S. Cl. 219—385 2 Claims

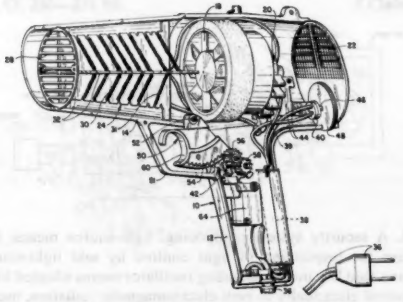


1. A household apparatus for roasting and crushing coffee in small quantities, said apparatus comprising: a container for receiving small quantities of unroasted coffeebeans, and including a lid closure; a housing forming a base and supporting said container; a shaft member disposed inside the container and extending axially thereof; a two-speed electric motor disposed in the housing and including an output shaft coupled to said shaft member; means for setting the speed of the motor at one of two predetermined values; a stirring member and a crushing member mounted one above the other on said shaft member inside of the container for rotation therewith; a heating plate forming the bottom of the container and having an electric resistance embedded therein; and a timer means for determining the heating time of the heating plate and the time during which said stirring member is driven, with respect to the quantity of coffee to be roasted and the degree of roasting desired, said timer means being disposed in said housing and including at least two controlled switches, one of said switches being connected in series with the current supply of said motor and the other of said switches being connected in series with said heating resistance.

4,196,343
HAIR DRYER

Paul S. Han, Foster City, Calif., assignor to C.A.H., Inc., San Mateo, Calif.

Filed Mar. 2, 1978, Ser. No. 882,711
Int. Cl.[2] A45D 20/00
U.S. Cl. 219—364 3 Claims



2. In a hand-held blower having a motor, a fan driven by said motor, means for providing electrical power to said motor, a heater, means for providing electrical power to said heater, a barrel, and a handle, wherein said electrical power to said motor causes said motor to drive said fan, causing a stream of air to flow through said barrel, wherein said electrical power to said heater causes said stream of air to be heated, and wherein a user holds said handle in a hand in order to direct said stream of air, the improvement comprising:

first electronic circuit means for continuously varying said electrical power provided to said motor;

second electronic circuit means for continuously varying said electrical power to said heater;

a finger actuated trigger adjacent to said handle and adapted to confront an index finger of said hand of said user holding said blower, said trigger having a portion at least partially surrounding said index finger to permit said user to impart bidirectional motion to said trigger with said index finger alone;

means coupling said trigger to said first electronic circuit means wherein movement of said trigger by said index finger causes variation of said electrical power to said motor, said means coupling said trigger to said first electronic circuit means being devoid of spring biasing means, thus permitting said trigger to retain a position once set;

switch means responsive to said finger actuated trigger for interrupting said electrical power to said heater element and said electrical power to said motor;

a thumb wheel having a projection proximate said handle and positioned to allow said user holding said handle to manipulate said thumb wheel with a thumb;

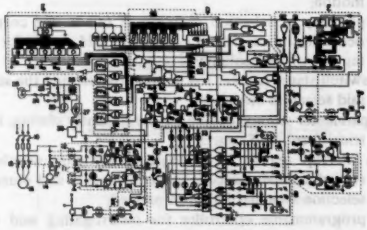
means coupling said thumb wheel to said second electronic circuit means wherein movement of said thumbwheel by said thumb causes continuous variation of said electrical power to said heater, said means coupling said thumbwheel to said second electronic circuit means being devoid of spring biasing means, thus permitting said thumbwheel to retain a position once set;

whereby said user is able to independently vary said electrical power to said motor and to said heater by use of said index finger and said thumb substantially without disturbing the position of remaining fingers on said hand holding said blower.

4,196,344
MACHINE CONTROLLER

Yoshikazu Kuze, 31-3, Higashi Magome 1-Chome, Ota-Ku, Tokyo, Japan

Filed Dec. 23, 1977, Ser. No. 863,847
Claims priority, application Japan, Dec. 27, 1976, 51-156317; Nov. 28, 1977, 52-141602
Int. Cl.[2] G06M 3/02
U.S. Cl. 235—92 CT 12 Claims



1. A machine controller for use with a machine and an outer sequencer which cooperates with said machine, comprising,

a stopping circuit actuatable for stopping said machine;

an emergency detecting circuit for detecting an emergency and actuating said stopping circuit to stop said machine;

a circuit whereby a timing pulse is generated once per cycle of said machine;

a first preset circuit for receiving said timing pulses, counting the pulses and displaying the count on a segment display and whereby said stopping circuit is actuated and

said machine is stopped when said count coincides with a numeral predetermined by a first preset code switch in said first preset circuit;

a second preset circuit for receiving said timing pulses and whereby a signal is provided to said outer sequencer when a count of the timing pulses has reached a numeral predetermined by a second preset code switch in said second preset circuit whereby said outer sequencer is actuated; and

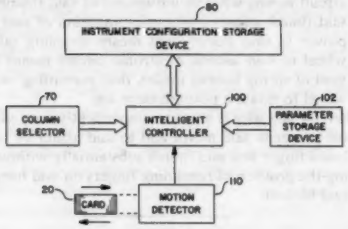
a controlling circuit for effecting operation of said outer sequencer.

4,196,345

OPERATING PARAMETER SELECTION AND ENTRY DEVICE

Guenther W. Wimmer, Portland, and Douglas B. Bingham, Sherwood, both of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Jun. 2, 1978, Ser. No. 912,119
Int. Cl.[2] G06K 7/00, 21/00; G06C 11/10
U.S. Cl. 235—435 **5 Claims**



1. An operating parameter entry and display system for controlling the operation of an electronic apparatus by providing a means for selecting operating conditions, the system comprising:

a matrix of human-readable operating parameters recorded on a movable record member, said movable record member including motion encoding means thereon;

means for detecting motion of said movable record member and for producing electrical signals representing said motion;

a plurality of selection switches in one-to-one correspondence to the number of columns in said matrix for selecting one of said columns;

a switch status register for temporarily storing the status of said selection switches;

a parameter storage device for permanently storing, in electrical form, said matrix;

an interrupt register for storing data indicating whether said record member has been moved or one of said plurality of selection switches has been pressed;

a programmable controller for interrogating said switch status register and said interrupt register to determine which operating parameter is to be retrieved from said parameter storage device for controlling the operation of the electronic apparatus; and

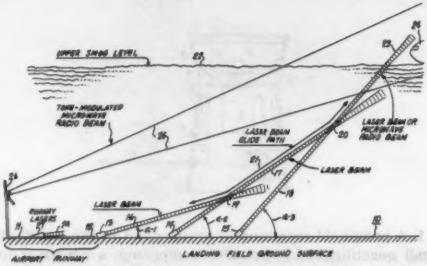
an interrupt generator coupled to said motion detection means to receive said electrical signals and to generate therefrom an interrupt request signal for interrupting said programmable controller, said interrupt generator also being coupled to said plurality of selection switches for receiving electrical signals indicating which one of said plurality of selection switches has been selected.

4,196,346

LASER GUIDED BLIND LANDING SYSTEM FOR AIRCRAFT

Raymond J. McElhannon, c/o Cooper, Dunham, Clark, Griffin & Moran, 30 Rockefeller Plaza, New York, N.Y. 10020

Filed Aug. 22, 1978, Ser. No. 935,980
Int. Cl.[2] H04B 9/00; G01S 1/18
U.S. Cl. 455—611 **5 Claims**



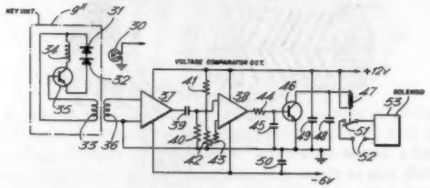
1. A laser guided blind landing system for aircraft comprising in combination: a longitudinally extending runway, a plurality of laser beam generators mounted in longitudinally spaced alignment therewith at one end thereof, said generators being positioned to direct laser beams therefrom at progressively increasing coplanar inclinations away from said runway in progressive sequence from the nearest to the furthest therefrom, thereby to produce intersecting segments of said beams in pairs of each, of least slope adjacent said runway and of greatest slope remotest therefrom, the so intersecting laser beam segments thereby forming a continuous laser aircraft glide path of gradually decreasing slope from said segment remotest from said runway to that closest thereto.

4,196,347

SECURITY SYSTEMS

John Hadley, St. Albans, England, assignor to Chubb & Son's Lock and Safe Company Limited, London, England

Filed Jul. 10, 1978, Ser. No. 923,282
Int. Cl.[2] E05B 47/00; H04B 9/00; H04Q 1/00
U.S. Cl. 455—603 **9 Claims**

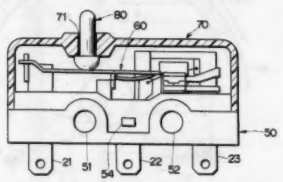


1. A security system comprising: light-source means; key means for responding to light emitted by said light-source means, said key means including oscillator means adapted to be powered electrically to emit electromagnetic radiation, means for converting light energy received from said light-source means to electrical energy, and means for supplying said electrical energy to power said oscillator means to emit said electromagnetic radiation; and receiver means for receiving electromagnetic radiation emitted by said oscillator means, said receiver means including means responsive to the said received electromagnetic radiation to provide manifestation thereof.

4,196,348
CONTACTLESS SNAP-ACTION PHOTOELECTRIC SWITCH

Norio Iwakiri, Otokuni, and Yasuhiro Kiyono, Nagaokakyo, both of Japan, assignors to Omron Tateisi Electronics, Co., Kyoto, Japan

Filed Mar. 13, 1978, Ser. No. 886,107
Claims priority, application Japan, Mar. 12, 1977, 52-27455; Mar. 12, 1977, 52-27456; Mar. 12, 1977, 52-27457
Int. Cl.[2] G01D 5/34
U.S. Cl. 250—229 6 Claims

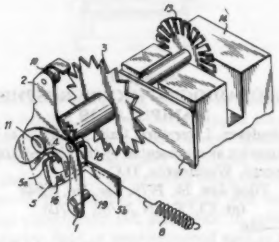


1. A contactless switch comprising:
a switch base;
a plurality of planar terminal members formed in said base in a common plane;
a photoelectric semiconductor device mounted on one of said terminal members and electrically connected with plurality of said terminal members;
a light-emitting semiconductor device confronting said photoelectric semiconductor device and electrically connected with at least one of said terminal members;
a shutter means with a light-blocking portion movable in a space between said photoelectric semiconductor device and said light-emitting semiconductor device, said shutter means including a means for imparting a snap-action operation to the movement of said shutter means.

4,196,349
CLOCK SIGNAL PRODUCING DEVICE FOR A CARD READER

Tsutomu Yamada, Shiojiri, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo and Shinshu Seiki Kabushiki Kaisha, Nagoya, both of, Japan

Filed Oct. 4, 1978, Ser. No. 948,619
Claims priority, application Japan, Oct. 4, 1977, 52-119160
Int. Cl.[2] G06K 7/016; G11B 27/26
U.S. Cl. 250—231 SE 5 Claims

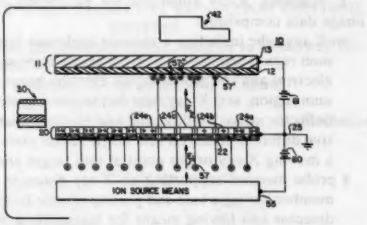


1. A clock-signal-producing device, comprising
a frame;
card-transfer rollers and card-guiding means for transferring and guiding through said device a card having slots therein and bearing data thereon in the form of marks or punched holes;
a trigger lever having an end and a shaft, said shaft being mounted on said frame, said trigger lever being mounted for rotation from a standby position to a rotated position under the urging of the forward end of a card in transit through said device and for permitting said card to pass over said end when in rotated position;
a coaxial toothed wheel mounted fixedly to said shaft for making contact with a card transiting said device and for rotating on said shaft under the urging of said card against the teeth of said wheel;
an indexing ratchet wheel affixed to said shaft for rotation therewith and with said coaxial toothed wheel;
an index lever having a tooth end and a tail end mounted for rotation on said trigger lever between a standby position and an operating position, said tooth end in said standby position of said index lever engaging said ratchet wheel for holding said ratchet wheel, said shaft and said toothed wheel stationary;
biasing spring means having two ends, one end being affixed to said frame and the other end being affixed to said tail end for biasing said index lever into engagement with said ratchet wheel and said trigger lever toward standby position;
first stopper means mounted on said frame for limiting the rotation of said trigger lever under the urging of said biasing means and thereby establishing said standby position;
second stopper means for limiting the excursion of said index lever by engagement of said tail end with said second stopper means when said trigger lever is rotated by transit of a card and for thereby disengaging said tooth end from said ratchet wheel so that said ratchet wheel and coaxial toothed wheel can rotate independently of said trigger lever.
a circular plate affixed to said shaft for rotation theerwith and with said toothed wheel, said plate having a plurality of slits around the circumference thereof; and
light-generating and light-sensing means for optically sensing transit of said slits during rotation of said plate and for generating corresponding electrical signals.

4,196,350
APPARATUS FOR PHOTOCONTROLLED ION-FLOW ELECTRON RADIOGRAPHY

Kei-Hsiung Yan, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jan. 2, 1979, Ser. No. 203
Int. Cl.[2] G03B 41/16
U.S. Cl. 250—315.2 8 Claims



1. In apparatus for photocontrolled ion-flow radiography of the type having: a first electrode supporting an insulative sheet and receiving radiation quanta differentially absorbed by an object to be analyzed; a second electrode spaced from the first electrode in a direction away from the source of radiation and comprising a conductive mesh having a layer of a photoconductor fabricated upon the mesh surface facing the first electrode; means, selectively movable into abutment with a free surface of the photoconductor layer, for converting the radiation quanta to optical photons of wavelength to which the photoconductor responds; and ion source means for projecting

charged ions from beyond said second electrode toward said first electrode, the improvement comprising:

a layer of a conductive material substantially transparent to the optical photons emitted from said converting means, said layer interposed between said converting means and said photoconductor layer;

a layer of insulative material substantially transparent to said optical photons, said insulative layer interposed between said conductive, transparent layer and said photoconductor layer;

both said conductive layer and said insulative layer being coupled to said converting means for movement therewith; and

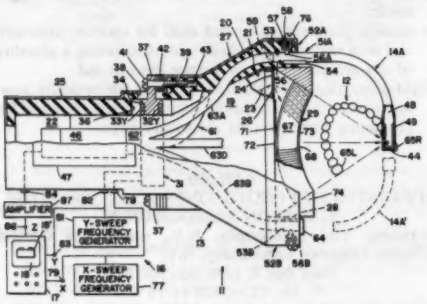
potential source means connected between the conductive mesh of said second electrode and the transparent, conductive layer for providing an electric field through said photoconductor during exposure of said phosphor to the differentially absorbed radiation.

4,196,351

SCANNING RADIOGRAPHIC APPARATUS

Richard D. Albert, 317 Hartford Rd., Danville, Calif. 94526

Filed Jun. 3, 1977, Ser. No. 803,077
Int. Cl.[2] A61B *6/14*; H05G *1/00*
U.S. Cl. 250—416 TV **30 Claims**



1. Scanning X-ray apparatus for producing radiographic image data comprising:

an X-ray tube including a vacuum enclosure forming a vacuum region and having a target anode plate and having an electron gun for producing an electron beam in said vacuum region, said X-ray tube further having electron beam deflector means for directing said electron beam to successive different points on said target anode plate to produce a moving X-ray origin point at said target anode plate,

a probe member supporting an X-ray detector, said probe member having a base end portion remote from said X-ray detector and having means for transmitting X-ray count data from said detector to said base end portion,

attachment means at said X-ray tube for receiving said base end portion of said probe member to support said probe member on said tube with said X-ray detector being located outwardly from said target anode plate to receive X-rays which have passed through a subject situated between said target anode plate and said X-ray detector, and

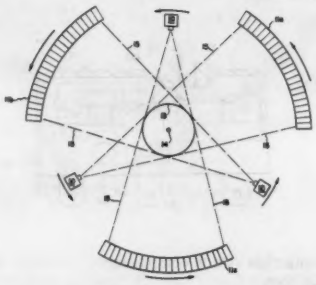
means on said X-ray tube for receiving said X-ray count data through said base end portion of said probe member and including at least one output terminal for transmitting electrical signals indicative of said X-ray counts.

4,196,352

MULTIPLE PURPOSE HIGH SPEED TOMOGRAPHIC X-RAY SCANNER

Walter H. Berninger, and Rowland W. Redington, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 28, 1978, Ser. No. 900,781
Int. Cl.[2] G03B *41/16*
U.S. Cl. 250—445 T **5 Claims**



1. In a computerized tomographic imaging system including:

x-ray source means;

x-ray detection means functioning to convert x-ray radiation from said x-ray source means to analog electrical signals, said radiation passing through and being variably absorbed by a body under study, said body being disposed between said x-ray source and said detection means;

means to convert said analog electrical signals to digital signals; and

computer means to operate on said digital signals so as to generate signals representing relative degrees of x-ray radiation absorption by said body under study; the improvement wherein:

the x-ray source means comprises a plurality N of x-ray sources rotatable about an axis of rotation and disposed along a circumference surrounding said body to be studied, with at least (N-1) of said sources being independently movable in a direction parallel to said axis of rotation, whereby the imaging system is reconfigurable from a rapid single slice mode to a multiple slice mode.

4,196,353

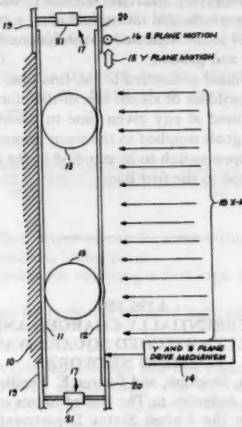
MICRORADIOGRAPHIC MICROSPHERE MANIPULATOR

Russell M. Singleton, Livermore, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 24, 1979, Ser. No. 5,948
Int. Cl.[2] G01N *23/06, 23/08*
U.S. Cl. 250—456 **8 Claims**

1. An apparatus for contact microradiographic characterization of hollow spherical members comprising: a pair of spaced substantially parallel films of material transparent to x-rays for holding at least one associated spherical member therebetween, means for adjusting pressure of one of said pair of films against an associated spherical member, a film plate having an emulsion side positioned in contact with another of said pair of films, means for moving said one of said pair of films with respect to said another of said pair of films in Y and Z planes for rolling associated spherical members located therebetween,

and means for directing x-rays through at least a portion of said films having associated spherical members therebetween for



irradiating same, wereby microradiographic images of associated spherical members may be obtained.

4,196,354

APPARATUS FOR PRODUCING ULTRAVIOLET RADIATION

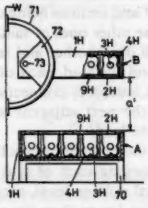
Friedrich Wolff, Bertholstrasse 18, 6000 Frankfurt, Fed. Rep. of Germany

Division of Ser. No. 716,253, Aug. 20, 1976, Pat. No. 4,095,113. This application Mar. 10, 1978, Ser. No. 885,123

Claims priority, application Fed. Rep. of Germany, Aug. 26, 1975, 2537855; Jan. 30, 1976, 2603460; May 31, 1976, 2624297; Feb. 12, 1976, 2605487

Int. Cl.[2] G01J *1/00*

U.S. Cl. 250—494 **10 Claims**



1. Apparatus for producing ultraviolet radiation, particularly a quick-tanning sunlamp, comprising at least one source of ultraviolet radiation; means associated with said source and defining at least one substantially horizontal exit opening for ultraviolet radiation, said exit opening being disposed at a small distance above said source, said source and said associated means being constructed and assembled to establish a high-density radiation field of predetermined area in the region of said exit opening; means for intercepting at least the major percentage of wavelength bands of ultraviolet radiation below approximately 315 nm ahead of said field, as considered in the direction of propagation of radiation toward said field; and support means extending across said exit opening and arranged to support a human body thereon, said support means being permeable to the remaining wavelength bands of ultraviolet radiation.

4,196,355

RADIATION SHIELD VEST AND SKIRT

Gayle J. Maine, Redmond, Oreg., assignor to Shielding, Inc., Madras, Oreg.

Filed Jan. 3, 1978, Ser. No. 866,526

Int. Cl.[2] G21F *3/02*

U.S. Cl. 250—516 **9 Claims**

1. A radiation shield garment for shielding the human body from radiation comprising in combination:

a vest for shielding the upper body and a skirt for shielding the lower body;

said vest including, when worn, overlapping front panel portions covering a front portion of the upper body and a rear panel portion forming a continuation of the front panel portions covering a back portion of the upper body, said front and rear panel portions including at least one layer of flexible radiation shielding material substantially coextensive with such portions so as to provide all-around radiation protection to the upper body from the waist area to the shoulder and neckline area of said upper body;

said skirt including, when worn, overlapping front skirt panel portions covering a front portion of the lower body and a rear skirt panel portion forming a continuation of the front panel portions covering the back portion of said lower body, said front and rear skirt panel portions including at least one layer of flexible radiation shielding material substantially coextensive with said portions so as to provide all-around radiation protection to the lower body from the waist area downwardly over at least the upper leg area of said lower body;

said vest and skirt each including closure means to adjustably secure their respective front panel portions in overlapping relationship;

said vest and skirt being dimensioned vertically so as to overlap one another when worn, thereby together providing vertically continuous radiation protection to the body.

4,196,356

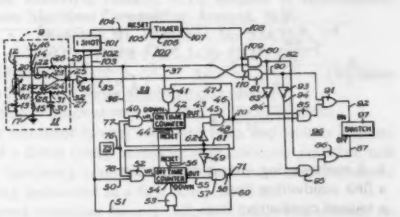
EXPANDED TIME CONSTANT CONDITION CONTROL SYSTEM

John L. Kabat, Bloomington, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 27, 1978, Ser. No. 872,866

Int. Cl.[2] G05D *23/20*

U.S. Cl. 307—117 **21 Claims**



1. An expanded time constant condition control system, including: condition responsive time proportional control means having switched output means; said switched output

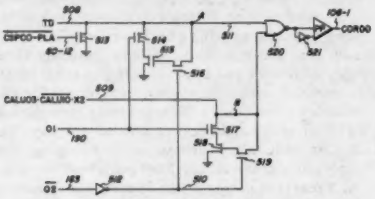
means providing repetitively switched output signals at a rate representative of a time constant of said time proportional control means when said condition responsive means senses a condition which is within a selected range; said switched output means providing constant output signals when said condition is outside of said selected range; counting means having input means responsive to said switched output signals; said counting means including pulse generating means; said pulse generating means having output means connected to said counting means and providing signals thereto; and said counting means combining said condition responsive repetitively switched output signals and said pulse generating output signals to expand said time constant of said condition responsive time proportional control means at an output means of said counting means.

4,196,357

TIME SLOT END PREDICTOR

Lamar T. Baker, Manhattan Beach, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Jul. 8, 1977, Ser. No. 814,064
Int. Cl.² H03K *13/34, 5/15, 19/08, 17/16*
U.S. Cl. 307—200 B **5 Claims**



1. For use in a clocked logic device in which at least one time slot appearing at an output of the device, is decoded from a plurality of timing signals, said timing signals changing logic levels in response to a first clock signal and being sampled in response to a second clock signal, a circuit for preventing false decoding of a time slot comprising:

means associated with said output for sampling and holding the logic state of said time slot, said sampling taking place at the rate of said second clock signal; and

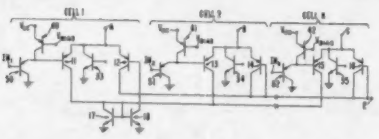
means associated with said output and responsive to said held logic state and said first clock signal for changing the logic state of said selected time slot at said output.

4,196,358

ANALOG MULTIPLEXER

John C. Conover, Sunnyvale, and Larry J. Kendall, San Jose, both of Calif., assignors to Fairchild Camera & Instrument Corporation, Mountain View, Calif.

Filed Aug. 16, 1977, Ser. No. 825,020
Int. Cl.² H03K *17/00*
U.S. Cl. 307—243 **13 Claims**



1. A multiplexing circuit comprising:

a first conducting line,

a second conducting line,

a plurality of input cells, each cell having:

an input terminal connected to receive electrical signals,

a first transistor connected to the input terminal, to a node and to the second line,

a second transistor connected between the node and the first line, and

means for supplying electrical current to the node during selected periods, said means including a current supply connected to the node and a switch connected between the node and ground;

an output terminal connected to the first line; and

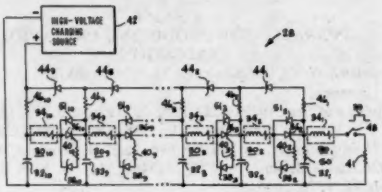
wherein the switches of all but one of the plurality of input cells are closed at any given time to thereby allow the electrical signals supplied to the input terminal of the cell having an open switch to be supplied to the output terminal connected to the first line.

4,196,359

DIFFERENTIALLY-CHARGED AND SEQUENTIALLY-SWITCHED SQUARE-WAVE PULSE FORMING NETWORK

George G. North, Stockton, and George E. Vogilin, Livermore, both of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 8, 1978, Ser. No. 913,634
Int. Cl.² H03K *5/01, 4/00*
U.S. Cl. 307—268 **9 Claims**



1. A pulse forming network for generating a high-energy square-wave pulse for delivery to a load, including:

a series of sections, each section comprising an inductor and a capacitor, one of said sections being connectable directly to the load and the other ones of said sections being serially arranged with one another and serially connected to said one section and the load, each of said other sections having respective inductors connectable to the inductor and capacitor in the next adjacent section serially connected closer to the load;

means connected to the capacitor of each of said sections for simultaneously charging each of said capacitors to a respective differential voltage level, each of said respective voltage levels being lower than the voltage level in the next adjacent section that is serially connected further from the load; and

switching means for sequentially switching the stored charge in each of said sections to the load to thereby deliver a high-energy square-wave pulse to the load, said switching means including a plurality of switches, adjacent ones of said other sections having one of said switches connected between the inductor of each of said other sections to the capacitor and inductor of the next adjacent section that is serially connected closer to the load, each of said switches being normally open during charging of said capacitors to said differential voltage levels, each of said switches being responsive to a predetermined potential difference between voltages across capacitors in adjacent sections to close and thereby sequentially provide a current path from each capacitor to the load.

4,196,360
INTERFACE DRIVER CIRCUIT

Edward B. Miller, and Charles W. Eichelberger, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 24, 1978, Ser. No. 871,991
Int. Cl.[2] H03K *19/08, 3/42*
U.S. Cl. 307—270 6 Claims

1. An interface driver circuit for transmitting signals via a transmission medium, comprising:

first input means for receiving a first logic signal of a first polarity;

second means for receiving a second logic signal of said first polarity;

an output;

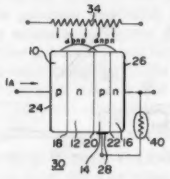
third means coupled between said first means and said output for driving said medium with the data of said first logic signal between first and second values of a voltage of said first polarity, said second means being coupled to said third means to cause said third means to be disabled whenever said second logic signal is received at said second means; and

fourth means coupled between said second means and said output for driving said medium with the data of said second logic signal between said first and second values of a voltage of the remaining polarity.

4,196,361
TEMPERATURE CHANGE DETECTOR

Jøsuke Nakata, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 8, 1977, Ser. No. 822,549
Int. Cl.[2] H03K *3/26*
U.S. Cl. 307—310 5 Claims



1. A temperature change detector which comprises:

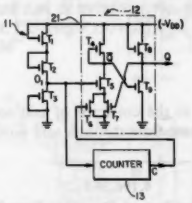
a heat sensitive semiconductor switching device thermally coupled with an element whose change in temperature is to be detected and including at least one pair of main electrode terminal and a control electrode terminal, the switching device being suddenly switched from a high impedance state to a low impedance state when heated to a switching temperature T_s by a change in temperature of the element whose temperature change is to be detected; and

a variable impedance element connected between one of the main electrode terminals of the heat sensitive semiconductor switching device and the control electrode terminal for compensating for changes ΔT in ambient temperature of the switching device by changing the switching temperature T_s of the switching device by an equal amount ΔT, the value of the impedance of the variable impedance element being varied by changes 66 T in ambient temperature of the switching device, and the value of the switching temperature T_s of the switching device being controlled by the value of the impedance of the variable impedance element to change by an equal amount ΔT, whereby the temperature change of the element whose change in temperature is to be detected can be detected without maintaining constant the ambient temperature of the heat sensitive semiconductor switching device.

4,196,362
CLEAR SIGNAL GENERATOR CIRCUIT

Yukio Maehashi, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Mar. 10, 1978, Ser. No. 885,219
Claims priority, application Japan, Mar. 12, 1977, 52-26603
Int. Cl.[2] H03K *5/153*
U.S. Cl. 307—350 6 Claims



1. A signal generator circuit comprising, a level detection circuit for generating a detection signal when a voltage of at least one power supply reaches a predetermined value, a counter circuit which commences a counting operation in response to said detection signal, said counter circuit generating a trigger pulse when said counter circuit has reached a predetermined count, a flip-flop circuit including a first load field-effect transistor of a depletion type and a second load field-effect transistor of an enhancement type, said flip-flop assuming a first state in response to said power supply voltage and a second state in response to said trigger pulse, and means for deriving an output of said flip-flop circuit as an output signal of said signal generator circuit.

4,196,363
OPEN COLLECTOR BIT DRIVER/SENSE AMPLIFIER

Shashi D. Malaviya, Fishkill, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 21, 1978, Ser. No. 934,732
Int. Cl.[2] H03K *5/18, 5/20;* G11C *7/06*
U.S. Cl. 307—362 11 Claims

1. An improved sense amplifier comprising:

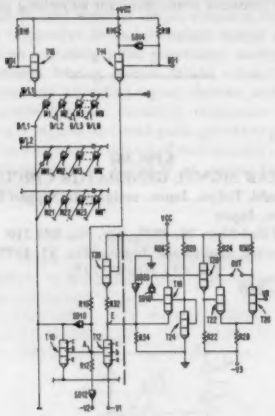
a bit line connected to a plurality of memory cells;

a first transistor having collector, base, and emitter regions, and a diode clamp across its base-collector junction, said bit line being connected to the collector and the emitter being connected to a first potential level;

a second transistor having collector, base, and emitter regions, the base and emitter regions being connected in common with the base and emitter regions of the first transistor;

a current source connected to the base regions of both said first and second transistors supplying a first level of cur-

rent when said bit line is to be unselected and a second level of current when said bit line is to be selected; and



means connected to the collector of said second transistor for sensing current flow through said second transistor.

4,196,364

Patent Not Issued For This Number

4,196,365

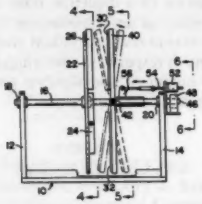
MAGNETIC MOTOR HAVING ROTATING AND RECIPROCATING PERMANENT MAGNETS

Doy Presley, 2209 Cordova Dr., Sanford, Fla. 32771

Filed Jul. 3, 1978, Ser. No. 921,441

Int. Cl.[2] H02K *7/06*

U.S. Cl. 310—23 **10 Claims**



1. A magnetic motor comprising:

(a) a rotary shaft;

(b) a rotating disc coupled to said shaft and having first, second and third magnets positioned at 120° intervals about the face of said disc;

(c) a pivotally mounted bracket symmetrically positioned about said shaft and having fourth and fifth magnets aligned to repel said first, second and third magnets when positioned adjacent thereto, said bracket having a first position in which said fourth magnet is positioned close to said disc and said fifth magnet is positioned away from said disc, and a second position in which said fourth magnet is positioned away from said disc and said fifth magnet is positioned close to said disc; and

(d) means coupled to said bracket for forcefully displacing said bracket into the first position as one of said rotating magnets is passing the top dead center position and for forcefully displacing said bracket into the second position as one of said rotating magnets is passing the bottom dead center position, whereby a rotational force is imposed on said shaft.

4,196,366

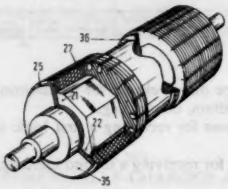
SYNCHRONOUS MOTOR

Lodewijk Schiethart, Dordrecht, Netherlands, assignor to Heemaf B.V., Hengelo, Netherlands

Filed Mar. 9, 1978, Ser. No. 885,008

Int. Cl.[2] H02K *19/05*

U.S. Cl. 310—162 **11 Claims**



1. An electric synchronous motor comprising a rotor with cage winding consisting of a solid shaft and rotor lamination packets holding the cage rods, sequential rotor poles being located in axially spaced planes, a stator with a field winding and a direct-current energizing winding surrounding the rotor between said planes, characterized in that the lamination packets form closed rings and the shaft of the rotor has local recesses to form poles.

4,196,367

X-RAY TUBE

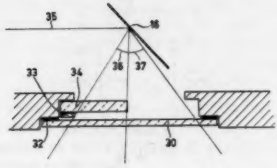
Willem H. Diemer, and Gerrit Zwep, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 13, 1978, Ser. No. 895,936

Claims priority, application Netherlands, Apr. 25, 1977, 7704473

Int. Cl.[2] H01J *35/14*

U.S. Cl. 313—59 **9 Claims**



1. An X-ray tube comprising an envelope, a cathode and an anode arranged in said envelope for generating an X-ray beam, said envelope having an exit aperture for passing said beam and a window mounted in said aperture, said window having non-uniform transmissivity to X-rays such that the transmissivity of a first portion of said window disposed in the path of X-rays which traverse the shortest distance between said anode and an object to be examined is lower than the transmissivity of a second portion of said window disposed in the path of x-rays which traverse the longest distance between said anode and said object so that the X-ray radiation incident on said object is of generally uniform intensity.

4,196,368

IMPROVING INCANDESCENT BULB EFFICIENCY

Charles R. Hauer, Wellesley Hills, Mass., assignor to Eikonix Corporation, Burlington, Mass.

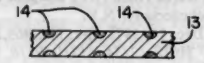
Filed Sep. 7, 1977, Ser. No. 831,172

Int. Cl.[2] H01J *1/14, 19/06;* **H01K** *1/04*

U.S. Cl. 313—345 **11 Claims**

1. In an incandescent light bulb having an electrically heated filament the improvement comprising,

means in the region of said filament coacting with said filament for increasing the ratio of visible energy radiated through the bulb envelope to infrared energy radiated



through the bulb envelope, said means comprising a coating on said filament for attenuating the radiation of infrared energy from said filament.

4,196,369

TELEVISION CAMERA TUBE WITH CONDUCTIVE OR SECONDARY EMISSIVE REGION BETWEEN WINDOW SEAL AND MESH

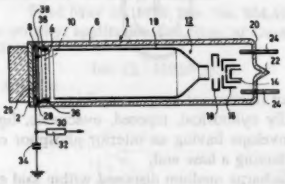
Jacob H. Geus, and Louis M. Swart, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 8, 1977, Ser. No. 786,047

Claims priority, application Netherlands, Apr. 12, 1976, 7603830

Int. Cl.² H01J *29/62, 31/38*

U.S. Cl. 313—365 **3 Claims**



1. A camera tube comprising an entrance window sealed to one end of a cylindrical tube, a photosensitive target mounted opposite the inner surface of the window, an electron gun for generating an electron beam which scans the target, a mesh electrode spaced from the target in the path of the electron beam and a surface potential stabilizing layer of a material having a secondary emission coefficient which is lower than one as long the surface potential at said layer is lower than the mesh potential, said layer extending on the inner surface of the cylindrical tube between the window and the mesh electrode.

4,196,370

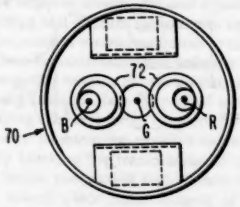
CRT GENERATING THREE INLINE BEAMS AND HAVING SHUNTS FOR WEAKENING CENTER BEAM HORIZONTAL MAGNETIC DEFLECTION AND STRENGTHENING VERTICAL DEFLECTION

Richard H. Hughes, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 24, 1978, Ser. No. 881,022

Int. Cl.² H01J *29/76, 29/51*

U.S. Cl. 313—413 **2 Claims**



1. In a color picture tube having an inline electron gun for generating and directing three electron beams, comprising a center beam and two outer beams, along coplanar paths toward a screen of said tube, wherein the beams pass through a deflection zone adapted to have vertical and horizontal magnetic deflection fields established therein, the improvement comprising:

means for weakening the effect of a portion of the horizontal magnetic deflection field on the center electron beam and for strengthening the effect of a portion of the vertical magnetic deflection field on the center electron beam, said means including magnetically permeable washer-shaped elements completely surrounding the paths of the outer beams, said elements being eccentric with respect to the outer beam paths with the geometric centers of said elements being located between the outer beam paths and the center beam path.

4,196,371

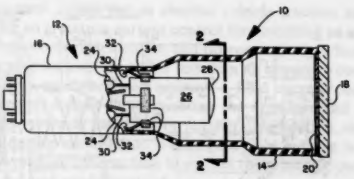
SHOCK-ABSORBING MEANS FOR MESH-CARRYING MEMBER OF A CATHODE RAY TUBE

Patrick J. McGrath, Jr., Cornelius, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Apr. 5, 1978, Ser. No. 893,632

Int. Cl.² H01J *19/48, 29/02, 29/82*

U.S. Cl. 313—456 **4 Claims**



1. In a cathode ray tube having a neck section and an electron gun structure including a mesh-carrying electrode member, the improvement comprising:

snubber spring means provided on the mesh-carrying electrode member; and

metal mesh means secured onto said snubber spring means and an exterior surface of the mesh-carrying electrode member and being disposed between the mesh-carrying electrode member and an inside surface of the neck section for absorbing shock forces to the cathode ray tube to prevent the mesh-carrying electrode member from engaging the inside surface of the neck section.

4,196,372

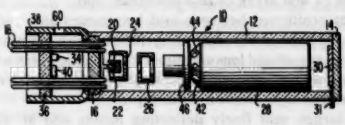
PICK-UP TUBE HAVING BIAS LIGHTING AND CONTROLS THEREFOR

Alfred Month, Lancaster, and Timothy E. Benner, Rohrerstown, both of Pa., assignors to RCA Corporation, New York, N.Y.

Filed Jun. 7, 1978, Ser. No. 913,340

Int. Cl.² H01J *31/26*

U.S. Cl. 315—10 **7 Claims**

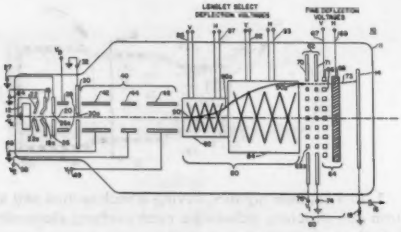


1. In a pick-up tube having an evacuated envelope and a photoconductive target electrode on an inner portion of said envelope and a light source disposed to provide an illumination onto said target for biasing the dark current of said target electrode, the improvement comprising:

means for removably mounting said light source onto said

tube externally of said envelope, said mounting means comprising an end cap adhesively secured to said tube and a non-conductive board for supporting said light source accessibly disposed within said cap and removably secured to the inner surface of said cap, and means on said board for presetting and adjustably controlling the light intensity of said light source.

4,196,373
ELECTRON OPTICS APPARATUS
Harold G. Parks, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Apr. 10, 1978, Ser. No. 894,757
Int. Cl.[2] H01J *29/46, 29/56*
U.S. Cl. 315—14 **15 Claims**



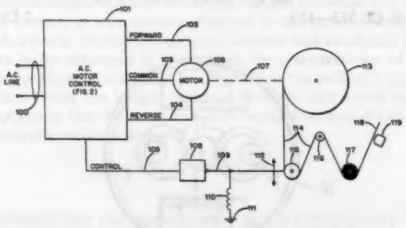
1. Electron optics apparatus comprising:
source means for emitting a beam of electrons along an apparatus axis;
a target spaced from said source means along said axis and having a surface generally facing said source means;
blanking means disposed along said axis for selectively blanking said electron beam emitted towards said target by said source means;
multi-electrode means disposed along said axis between said source and blanking means and said target for collimating the electron beam emitted toward said target from said blanking means;
multi-electrode lens means situated along said axis between said collimating means and said target and having a two-dimensional array of apertures therethrough for focussing upon said target surface an electron beam passing through any of said apertures;
means positioned along said axis for coarsely deflecting the electron beam from said collimating means to a selected one of said array of lens apertures; and
means positioned between said lens means and said target surface for finely deflecting the focused electron beam from any of said lens apertures to a specific point within an area of the target surface associated with that lens aperture through which the beam passes;
said target, said finely deflecting means and at least one electrode of each of said source, collimating and lens means being operated at a D.C. component of the potential thereon substantially equal to ground potential; and
said coarsely deflection means and at least one element of each of said collimating and lens means being operated at a D.C. component of the potential thereon different from ground potential.

4,196,374
COMPACT FLUORESCENT LAMP AND METHOD OF MAKING
Harald L. Witting, Burnt Hills, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Dec. 14, 1978, Ser. No. 969,305
Int. Cl.[2] H01J *17/34, 61/10, 9/18, 9/38*
U.S. Cl. 315—58 **16 Claims**

1. A compact fluorescent lamp comprising:
a substantially cylindrical, tapered, evacuable, light-transmissive envelope having an interior phosphor coat, said envelope having a base end;
a gaseous discharge medium disposed within said envelope;
tapered partition means disposed within said envelope, said taper being matched to the taper of said envelope, so as to define a two-ended discharge path having a length substantially twice the length of said envelope; and
electrode means for initiating and sustaining a discharge current, said means being disposed at each end of said discharge path.

4. The lamp of claim 1 further comprising ballast means coupled to said electrode means and disposed at the base end of said envelope for coupling into Edison base sockets.

4,196,375
A.C. TAPE REEL SERVO
Heinz H. Findeisen, Milford, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.
Filed Mar. 31, 1978, Ser. No. 892,236
Int. Cl.[2] B65H *77/00*
U.S. Cl. 318—6 **10 Claims**



1. A servo circuit for a magnetic tape drive, having a tape reel on which magnetic tape for said drive is wound, an A.C. motor for rotating said tape reel, means for forming a loop in

said tape, transducer means for developing a control signal proportional to the length of said loop, and means for receiving power from an A.C. power line having a sinusoidal voltage waveform thereon; said servo circuitry comprising,

means for generating a saw-tooth voltage waveform synchronized to the frequency of said power line and having a frequency which is a multiple of the frequency of said power line,

comparing means, having an output, and being responsive to said control signal and said voltage waveform for applying a gate signal to said output when the magnitude of said voltage waveform equals the magnitude of said control signal and for removing said gate signal from said output the next subsequent time when the magnitude of said voltage waveform equals the magnitude of said control signal,

and means responsive to said gate signal appearing at said comparing means output for applying power from said power line to said motor.

4,196,376

ROTARY SPEED RATIO CONTROL ARRANGEMENT

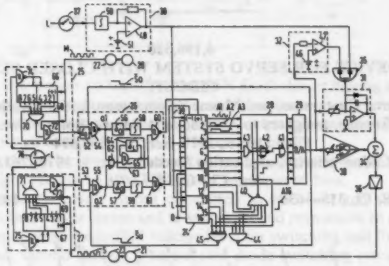
Nils-Ole Harvest, Nordborg; Niels Hasberg, Sonderborg, and Kaj Nielsen, Nordborg, all of Fed. Rep. of Germany, assignors to Danfoss A/S, Nordborg, Denmark

Filed May 10, 1978, Ser. No. 904,494

Claims priority, application Fed. Rep. of Germany, May 13, 1977, 2721634

Int. Cl.² H02P 5/50

U.S. Cl. 318—78 **13 Claims**



1. A circuit assembly for controlling the rotary speed ratio of two lead and follower motors, comprising, lead and follower pulse generator means for generating lead and follower pulse trains with frequencies proportional to the respective speeds of said motors, bi-directional counter means for counting and outputting the difference in the number of pulses output by said pulse generator means, said counter means having a mean counting range less than the maximum counting range thereof generated by n outputs, said maximum counting range being generated by m outputs, digital/analog converter means responsive to said mean counting range and having an analog output with a negative lower limit and a positive upper limit, means for setting said counter means to an intermediate value as a zero point, control means responsive to said digital/analog converter means for controlling said follower motor, first logic means responsive to outputs of said counter corresponding to the highest and lowest values outputs of said mean counting range for setting said converter respectively to its maximum positive value or its minimum negative value, blocking means for separately blocking the transmission of said lead and follower pulse trains, and second logic means responsive to the highest and lowest place value outputs of an intermediate counting range which bridges said mean counting range for selectively operating said blocking means to avoid counting beyond the upper and lower limits of said counter means.

4,196,377

CONTROL CIRCUITS FOR ELECTRIC TRACTION MOTORS FOR VEHICLES

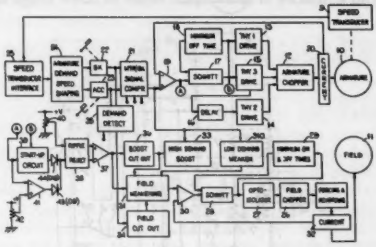
Trevor C. Boxer, Birmingham, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Oct. 31, 1977, Ser. No. 847,282

Claims priority, application United Kingdom, Nov. 2, 1976, 45459/76

Int. Cl.² H02P 3/14, 5/06

U.S. Cl. 318—269 **5 Claims**



1. A control circuit for an electric vehicle traction motor comprising an armature current control for switching an armature current control element on and off respectively when the armature current exceeds and is less than an armature current demand by a predetermined amount, a field current control mode selection means for connecting the armature and field windings to provide motoring or regenerative braking, means operable during motoring to weaken the field current whenever the armature current fails to exceed the armature current demand by said predetermined amount and means operating during regenerative braking for weakening the field current whenever the armature current exceeds a predetermined level.

4,196,378

CIRCUIT FOR DETECTING A POSITIVE PHASE OR AN OPPOSITE PHASE IN THREE PHASE ALTERNATING POWER SOURCE

Hiroshi Shirai, Hirakata, Japan, assignor to Tae-Weon, Mo, Moriguchi, Japan

Filed Feb. 6, 1978, Ser. No. 875,509

Claims priority, application Japan, Feb. 22, 1977, 52/21085[U]; Jul. 2, 1977, 52/13993[U]

Int. Cl.² H02P 7/18

U.S. Cl. 318—438 **11 Claims**

1. In a phase detector circuit for use in the connection of a three-phase load to a three-phase power supply comprising;

first circuit means to produce a single-phase output signal when connected to said three-phase supply with said three-phase load;

said output single having a first electrical characteristic when the load is connected to the supply in positive phase relationship and having a second electrical characteristic when the load is connected in opposite phase relationship;

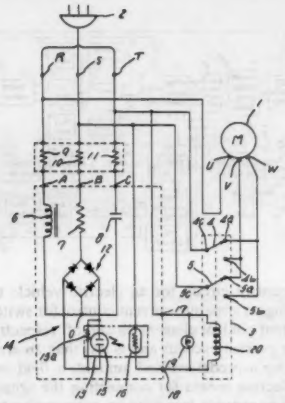
second circuit means including control element means and output signal detecting means responsive to one said first and second electrical characteristics to establish a conductive circuit condition for said control element means and responsive to the other of said characteristics to establish a non-conductive circuit condition for said control element means;

the control element means being responsive to said conductive circuit condition to connect the load to the supply in one of two alternative phase relationships and being responsive to said non-conductive circuit condition to connect the load to the supply in the other of the alternative phase relationships;

said first circuit means comprising three branches connected with respective branches of the three-phase supply, one of

said branches including inductance means to delay the phase, another of the branches including capacitor means to advance the phase, said three branches being connected together beyond said respective inductance and capacitor means, and rectifier means having an input series-connected in one of said three branches, the output of the rectifier means being connected with the second circuit means;

said output signal detecting means comprises photo-voltaic transducer means responsive to one of said first and second electrical characteristics to assume a conductive state and responsive to the other characteristic to assume an infinitely resistive state, and said control element means includes relay coil means connected to said power supply through said transducer means to be energized when the transducer means is conductive;



said second circuit means including a source of illumination coupled with the transducer means and connected with said output signal to become illuminated in response to only one of the first and second electrical characteristics of said signal.

4,196,379

PICKUP ARM CONTROL SYSTEM IN RECORD PLAYER OR THE LIKE

Motoi Iyeta, Hamakita, and Mitsuru Baba, Hamamatsu, both of Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed May 16, 1977, Ser. No. 797,346
Claims priority, application Japan, May 18, 1976, 51-56840
Int. Cl.[2] G05B *19/28*
U.S. Cl. 318—601 **6 Claims**

1. A pickup arm control system in a record player or the like comprising:

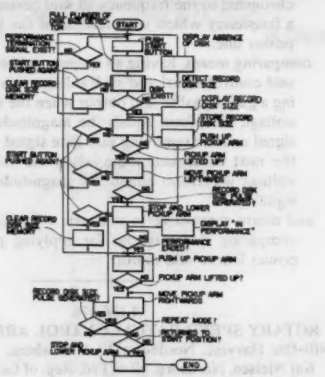
means for selectively driving a pickup arm up, down, to the right and to the left;

an input circuit for detecting the size of a record disk and monitoring the movement of a pickup arm and generating detection signals corresponding thereto, and a logic circuit for performing logical operations on said detection signals,

said input circuit including a light detector and a coupled light source for reflecting light off a record disk to said light detector and generating a first pulse representative of the size of the record disk when there exists the record disk on a turntable, and additional detector means for generating a second pulse representative of the size of the record disk corresponding to standard disk sizes,

said logic circuit including a disk size memory and an AND gate, said AND gate taking the logical product of said first and second pulses representative of disk size to form a disk size information signal, which is stored in said disk size memory and is supplied to said pickup arm driving means to actuate it, whereby if no disk size information signal is generated there is no actuation of said pickup arm,

said input circuit further including a pickup arm position monitoring circuit comprising means for sensing the position of the pickup arm as it moves to the right or the left and for furnishing a signal to drop the pickup arm as it moves to the left when the position of the pickup arm corresponds to the disk size information signal stored in said disk size memory.

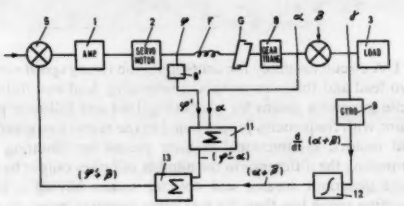


4,196,380

DEVICE FOR SERVO SYSTEM WITH CLOSED SERVO CIRCUIT

Varne Gustavsson, and Manne Salomonsson, both of Karlskoga, Sweden, assignors to Aktiebolaget Bofors, Bofors, Sweden

Filed Dec. 9, 1977, Ser. No. 858,994
Claims priority, application Sweden, Dec. 9, 1976, 7613820
Int. Cl.[2] G05B *11/01*
U.S. Cl. 318—630 **4 Claims**



1. An apparatus for a servo system having a closed feedback circuit for controlling a driving servo motor, comprising:

driving wheel means connected to said servo motor and rotatably contacting a gear ring means to rotate said gear ring means;

load means supported by said gear ring means for rotation with said gear ring means;

servo measuring means rotatably contacting said servo motor for measuring a servo operating signal;

transmitter means for rotatably contacting said gear ring means at a point substantially 90° from the point of contact of said driving wheel means and generating a corresponding first gear signal;

control means responsive to at least said first gear signal to pass a corresponding control signal having a backlash signal component corresponding to the magnitude of a

parameter defining the backlash and resilience of said servo system;

means for receiving said control signal and said servo operating signal and generating a difference output signal having a component corresponding to a negative of said backlash signal component;

position sensing gyro means for generating a gyro signal in response to the movement of said load means, said gyro signal including a component corresponding to said backlash signal component;

means for adding said gyro signal and said difference output signal to generate a corresponding feedback output signal, the addition eliminating said backlash signal component from said feedback signal; and

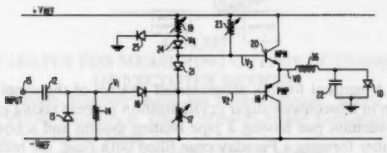
means for applying said feedback signal to control said servo motor.

4,196,381

LOW-POWER VOLTAGE AND CURRENT DIODE DRIVER

Arthur F. Standing, Rockville, Md., assignor to Communications Satellite Corporation, Washington, D.C.

Filed Aug. 11, 1977, Ser. No. 823,798
Int. Cl.[2] H01P *1/15*
U.S. Cl. 323—23 **6 Claims**



1. A low power voltage/current PIN diode driver having an input and an output comprising in combination:

a first driver means connected to said output for supplying a voltage to said PIN diode for reverse bias;

a second driver means connected to said output for supplying a current to said PIN diode for forward bias;

a diode switching circuit connected to said first and said second driver means and to said input and responsive to an input pulse controlled voltage level for switching said first and second drivers wherein said diode switching circuit comprises:

means for operating the first driver means as an emitter follower when the voltage level is lesser than or equal to a first preselected value and for operating the first driver means as a voltage source when the voltage level exceeds said first preselected value;

means for operating the second driver means as an emitter follower when the voltage level is greater than or equal to a second preselected value and for operating the second driver as a constant current source when the voltage level exceeds said second preselected value.

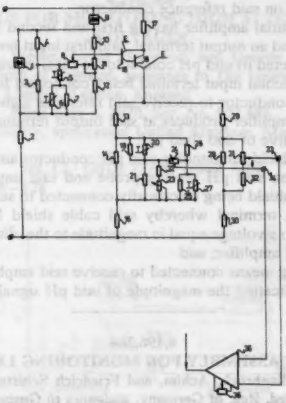
4,196,382

PHYSICAL QUANTITIES ELECTRIC TRANSDUCERS TEMPERATURE COMPENSATION CIRCUIT

Janusz Bryzek, Warsaw, Poland, assignor to Predsiębiorstwo Auttomatyki Przemyslowej "Mera-Pnefal", Warsaw, Poland

Filed Feb. 16, 1978, Ser. No. 878,380
Claims priority, application Poland, Feb. 18, 1977, 196115
Int. Cl.[2] G01L *1/22*; G01K *7/20*
U.S. Cl. 323—75 A **6 Claims**

1. A temperature compensating arrangement of electrical transducers of physical quantities with the application of resistors, strain gauges and thermistors, said arrangement comprising: at least two compensating bridge circuits; a first one of said bridge circuits having first resistor means, first potentiometer means and first thermistor means, a first control element connected across a diagonal of said first bridge circuit; voltage divider means for supplying voltage to said first bridge circuit, said voltage divider means having a resistor across said first bridge circuit; a first strain gauge connected in series with said resistor of said voltage divider means; a second strain gauge; a zeroing circuit connected to said second strain gauge, said zeroing circuit allowing zeroing of voltage difference between outputs of said first bridge circuit when a lower range value of measured physical quantity is applied allowing second bridge circuit supply current adjustment for required upper range output signal when an upper range value of measured physical



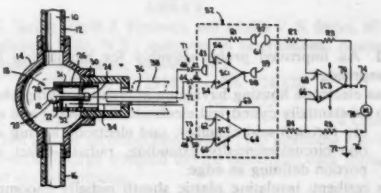
quantity is applied, said second strain gauge being in said first bridge circuit; a second compensating bridge circuit having second resistor means, second potentiometer means and a second control element connected across a diagonal of said second bridge circuit; a Zener diode connected in series with a resistor for supplying voltage to said first bridge circuit; a current source connected to said first and second bridge circuits; auxiliary diode means connected between said current source and said second bridge circuit; and output potentiometer means for providing an output signal from said first bridge circuit.

4,196,383

COAXIAL DIFFERENTIAL PH SYSTEM

Horace A. Teass, Jr., 25 Mead Rd., Armonk, N.Y. 10504

Filed May 8, 1978, Ser. No. 903,788
Int. Cl.[2] G01N *27/42*
U.S. Cl. 324—438 **5 Claims**



1. A circuit for measuring the pH of a fluid comprising:

a pH sensing probe consisting of a pH sensitive glass chamber, a conductive fluid contained in said glass chamber, and a pH conductor extending from a point in contact with said conductive fluid inside said glass chamber to the outside thereof, whereby contact between said fluid and said pH sensitive glass chamber produces a pH signal on said pH conductor;

a reference probe surrounding said pH sensing probe and coaxial and symmetrical thereto, said reference probe consisting of a cylindrical tube aligned coaxial with said pH sensing probe; first and second gaskets spaced apart and extending between said tube and said glass chamber, whereby a duct surrounding a part of said glass chamber is formed by said gaskets, said tube and said glass chamber; a second conductive fluid contained in said duct; and a reference conductor extending from a point in contact with said second conductive fluid inside said duct to the outside thereof, whereby contact between said fluid and said pH sensitive glass chamber produces a reference signal on said reference conductor;

a differential amplifier having first and second input terminals and an output terminal, said first input terminal being connected to said pH conductor to receive said pH signal, said second input terminal being connected to said reference conductor to receive said reference signal, whereby said amplifier produces at said output terminal a voltage indicative of said fluid pH;

a cable shield surrounding said pH conductor and extending between said pH sensing probe and said amplifier, said cable shield being electrically connected to said amplifier output terminal whereby said cable shield has applied thereto a voltage equal in magnitude to the output voltage of said amplifier; and

indicating means connected to receive said amplifier output for indicating the magnitude of said pH signal.

4,196,384

PROBE ASSEMBLY FOR MONITORING LIQUIDS

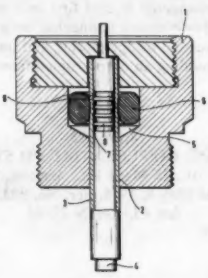
Helmut Willenbrock, Achim, and Friedrich Schittek, Bremen, both of Fed. Rep. of Germany, assignors to Gustav F. Gerdts KG, Bremen, Fed. Rep. of Germany

Filed Mar. 6, 1978, Ser. No. 883,542

Claims priority, application Fed. Rep. of Germany, Mar. 12, 1977, 2710872

Int. Cl.[2] G01N *27/42*

U.S. Cl. 324—446 **4 Claims**



1. An improved probe assembly for monitoring liquids, comprising:

an electrode housing having an internal receiving chamber;

a substantially cylindrical electrode disposed in and extending through said chamber, said electrode having at least one circumferentially extending, radially-offset surface portion defining an edge;

a resilient, insulating plastic sheath radially encompassing said electrode having an inner wall portion opposing said edge of said electrode; and

an elastic sealing ring which is mounted with radial pretension between said insulating sheath and the surrounding wall of said receiving chamber, said sealing ring being disposed at a level adjacent to said edge of said electrode so that, as a result of its radial pretension, it biases said sheath against said edge of said electrode as a result of which a concentric radial sealing is effected between said sealing ring and said wall of said receiving chamber, said sealing ring and said sheath, and said sheath and said electrode, said radial sealing being induced solely by the radial pretension of said elastic sealing ring.

4,196,385

METHOD AND APPARATUS FOR MEASURING THE CONCENTRATION OF FLUIDS

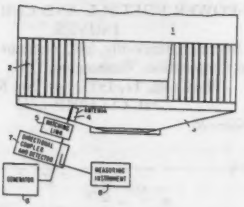
Peter Vestergaard, Holeby; Günther Møller, and Rud F. Madsen, both of Nakskov, all of Denmark, assignors to Aktieselskabet de Danske Sukkerfabrikken, Copenhagen, Denmark

Filed Dec. 27, 1977, Ser. No. 864,799

Claims priority, application Denmark, Dec. 30, 1976, 5901/76

Int. Cl.[2] G01F *23/28*; G01R *27/04*; C13F *1/02*

U.S. Cl. 324—58.5 B **2 Claims**



1. A method for the programmed control of the supply of syrup in a batchwise sugar crystallization process taking place in a vacuum pan having a pipe heating system and a bottom chamber forming a Faraday cage filled with fluid, the method comprising supplying electric oscillations of constant power and constant frequency from a source of such oscillations through an adjustable impedance matching link to an antenna mounted in said bottom chamber in direct contact with the fluid therein during the progress of the crystallization in the pan, adjusting said matching link for minimum reflection from the interface of the antenna and the fluid in the pan at a given concentration of the fluid, and during the progress of crystallization, measuring the power of the signal reflected from the interface of the antenna and the fluid in the pan as a consequence of deviation from ideal matching of the impedances of the antenna and the source, and using the measurement as an input signal for the programmed control of the supply of syrup in accordance with a predetermined program, the electric oscillations having a sufficiently high frequency such that the electric conductivity has no substantial influence on the result of the measurement.

4,196,386

METHOD AND PORTABLE APPARATUS FOR TESTING DIGITAL PRINTED CIRCUIT BOARDS

Donald E. Phelps, Kettering, Ohio, assignor to NCR Corporation, Dayton, Ohio

Filed Apr. 13, 1978, Ser. No. 895,898

Int. Cl.[2] G01R *15/12*; G06F *11/00*; G01R *31/02*

U.S. Cl. 324—73 PC **14 Claims**

1. A tester for testing printed circuit boards comprising in combination:

(a) a processor for storing and executing a test program;

(b) a bus connected to said processor;

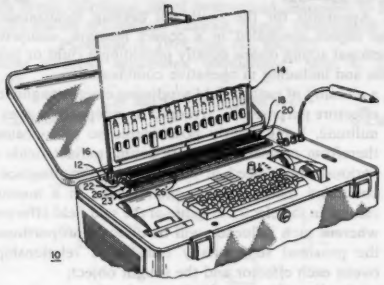
(c) a plurality of programmable driver/sensor circuits controlled by said processor and having inputs coupled to the bus;

(d) a circuit board connector for receiving a board to be tested;

(e) a plurality of circuit board connecting means connected, respectively, to a plurality of terminals of said circuit board connector;

(f) a plurality of driver/sensor connecting means connected, respectively, to outputs of said driver/sensor circuits;

(g) a plurality of switching means each coupled between corresponding ones of said circuit board connecting means and respective ones of said driver/sensor connecting means;



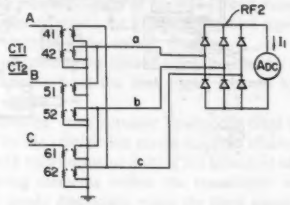
(h) first means for conducting electrical signals from various connecting means including predetermined ones of said driver/sensor connecting means to predetermined non-corresponding ones of said circuit board connecting means.

4,196,387

APPARATUS FOR MEASURING OUTPUT DC CURRENT OF RECTIFIER DEVICES

Isao Watabe, Higashiyamato, and Hideki Mizuno, Tokyo, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Apr. 17, 1978, Ser. No. 897,207
Int. Cl.[2] G01R *19/00, 19/18*
U.S. Cl. 324—107 **2 Claims**



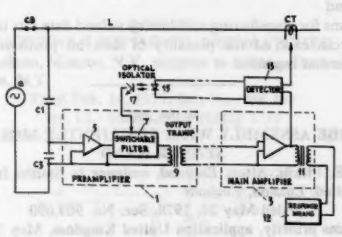
1. In an apparatus for measuring the output DC current of a polyphase rectifier device of the type wherein the output DC current is indirectly measured on the input side of a polyphase rectifier transformer provided with phase shift windings, said output DC current being measured through a current transformer means and a measuring rectifier, the improvement in said current transformer means comprising a first and a second three-phase auxiliary current transformer means having three-phase primary windings of the same phases respectively connected in series with each other, and having secondary windings connected such that the resultant current of the secondary winding of a second phase of said first auxiliary current transformer means and the resultant current of the secondary winding of a first phase of said second auxiliary current transformer means flow through a first conductor of a three phase system, that the resultant current of the secondary winding of a third phase of said first auxiliary current transformer means and the resultant current of the secondary winding of a second phase of said second auxiliary transformer means flow through a second conductor of said three phase system, and that the resultant current of the secondary winding of a first phase of said first auxiliary current transformer means and the resultant current of the secondary winding of a third phase of said second auxiliary transformer means flow through a third conductor of said three phase system, the three phase secondary output current of said first and second auxiliary current transformer means on said first, second and third conductors being rectified by said measuring rectifier, and the current ratios of said first and second auxiliary current transformer means being set such that the currents induced in said secondary windings and flowing through the first, second and third conductors have a waveform wherein the area of a decreasing current wave is equal to the area of an increasing current wave during commutation.

4,196,388

APPARATUS FOR MONITORING HIGH ALTERNATING VOLTAGES

Geoffrey C. Weller, Great Haywood, and George W. Evans, Dawley, both of England, assignors to The General Electric Company Limited, London, England

Filed May 4, 1978, Ser. No. 902,686
Claims priority, application United Kingdom, May 11, 1977, 19766/77
Int. Cl.[2] G01R *15/06*; H04B *1/04*
U.S. Cl. 324—128 **7 Claims**



1. An apparatus for monitoring high alternating voltages comprising: a capacitor potential divider for connection across a voltage to be monitored; a response means connected across a section of the divider; filter means between said section of the divider and the response means, said filter means having a first mode in which it exhibits a relatively wide band pass characteristic and a second mode in which it exhibits a relatively narrow band pass characteristic, said filter means including means enabling it to be changed from its second to its first mode with a given d.c. voltage at its input without producing an appreciable change in d.c. voltage at its output, and control means for causing said filter means to operate temporarily in its second mode to reduce the effect on said response means of a voltage step across said section of the divider.

4,196,389

TEST SITE FOR A CHARGED COUPLED DEVICE (CCD) ARRAY

Helen J. Kelly; David J. Perlman, and Akella V. S. Satya, all of Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 13, 1978, Ser. No. 924,128
Int. Cl.[2] G01R *31/02, 31/22*
U.S. Cl. 324—158 R **4 Claims**

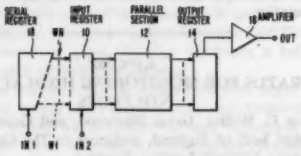
1. A test site for an integrated circuit chip including a serial-parallel-serial charge coupled device electronic data storage, said test site comprising:

a first charge coupled device register having a plurality of data bit positions, and adapted to receive a first serial stream of data bits at a first one of said data bit positions, and for transferring said data bits to successive data bit positions in response to a plurality of clock signals;

a second charge coupled device register also having a plurality of data bit positions, and adapted to receive a second stream of serial data bits at a first one of its data bit posi-

tions, and for transferring its data bits to successive data bit positions in response to said same plurality of clock signals;

said first and second registers being closely spaced in parallel relationship to each other on said integrated circuit chip, a successive corresponding plurality of their data bit positions being spaced at incrementally variable intervals with respect to each other such that data bits of one binary



value in a bit position of said first register may at least partially be transferred to a corresponding bit position in said second register as a function of the spacing of said corresponding bit positions with respect to each other; and

means for transferring said binary valued data bits in parallel from each of the plurality of data bit positions in said second register.

4,196,390

PROBE ASSEMBLY WITH RESILIENTLY MOUNTED SENSOR HEAD

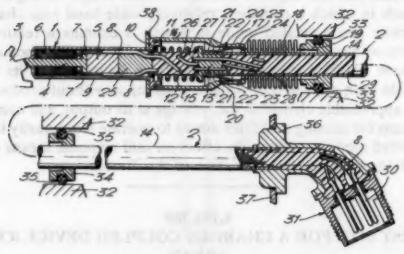
John E. Pitkin, Alton, England, assignor to Smiths Industries Limited, London, England

Filed May 24, 1978, Ser. No. 909,090

Claims priority, application United Kingdom, May 27, 1977, 22610/77

Int. Cl.[2] G01P 3/42

U.S. Cl. 324—262 **10 Claims**



1. In a probe assembly of the kind including a probe body and a sensor head mounted at the forward end of said probe body, the improvement wherein said assembly includes: a sleeve member; means mounting said sleeve member with said sensor head to extend rearwardly of said sensor head; a bellows unit; means sealing a forward end of said bellows unit to said sleeve member; means sealing a rearward end of said bellows unit to said probe body, with the forward end of said probe body extending through said bellows unit and within said sleeve member; slide means; and means mounting said slide means to resiliently contact both the forward end of said probe body and the inner surface of said sleeve member so as thereby to permit limited axial displacement of said sensor head relative to said probe body by sliding contact with said slide means.

4,196,391

METAL LOCATOR WITH STEREOTONIC INDICATION OF TRANSLATERAL POSITION

Harold J. Weber, 20 Whitney Dr., Sherborn, Mass. 01770

Filed Apr. 28, 1978, Ser. No. 900,988

Int. Cl.[2] G01V 3/10

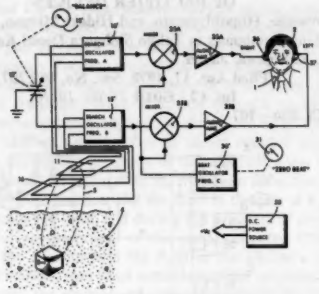
U.S. Cl. 324—328 **10 Claims**

1. Apparatus for the positional bearing localization of a metal object concealed in a covert medium, comprising a directional acting means usually providing a right or left indication and including in operative combination:

a. a plurality of radiant field producing electromagnetic field effectors purposefully arranged in independent axes dissimilitude, being jointly positionable so as to cause the therefrom emanated separate acting radiant fields to be variously influenced in character by the presence of a concealed metal object which results in a measurable change in the electrical value of the said field effector and wherein such influence will be directly proportionate to the proximal substantially translateral relationship between each effector and the sought object;

b. a plurality of search frequency signal generative means each of which is coupled to at least one of the said plural field effectors, wherein the individual search signal periodicity, or frequency rate, is caused to deviate in direct proportion to the said effector electrical value variations;

c. beat frequency signal generative means providing a source of beat signal which is effectively common to each search signal, including output therefrom;



d. heterodyne detector, say mixer, means including a plurality of first input ports each of which is coupled to at least one of the said plural search frequency signal means outputs, further including at least one second input port coupled to a common acting said beat signal output which provides substantially the same beat frequency effect for each said search frequency input, whereby the said detector includes output port means operative to yield at least a plurality of difference frequency signals resulting from the effectively separate heterodyne mixing of each of the said plural search frequency signals with the said common beat frequency signal;

e. plural amplifier means coupled to said detector output port means, whereby each constituent amplifier is principally responsive to usually but one of the said mixer said difference frequency signal combinations, including output therefrom; and,

f. plural directionally indicant means coupled to said amplifier means output whereby at least two signals result therefrom which will provide information to an operator which is significative of the position of the said concealed metal object in relation to the said plural field effectors.

4,196,392
METHOD AND APPARATUS FOR MONITORING AND CONTROLLING THE ANODE DISSIPATION OF TRANSMITTERS

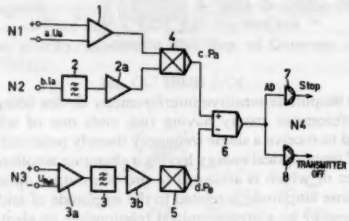
Hanspeter Lüchinger, Rorschach; Ole Snedkerud, Windisch, and Jürg Wyss, Döttingen, all of Switzerland, assignors to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed Apr. 3, 1978, Ser. No. 892,977

Claims priority, application Switzerland, May 4, 1977, 5553/77

Int. Cl.[2] H03G 3/20; H04B 1/04

U.S. Cl. 455—117 6 Claims



1. An apparatus for monitoring and controlling the anode power dissipation of a transmitter producing an R.F. output power and having an anode and related tuning elements, the transmitter anode having an input voltage, an input current proportional to anode modulation, and a symmetric output power as determined by output power sending means measuring the transmitter R.F. output power, comprising:

first circuit means for deriving a first signal proportional to the input power (P_a) to the transmitter anode;

second circuit means for deriving a second signal proportional to the output power (P_O) at the transmitter anode;

subtracting means coupled to the first circuit means and the second circuit means for producing a third signal proportional to transmitter anode dissipation, the subtractor means subtracting the second signal derived by the second circuit means from the first signal derived by the first circuit means;

a first threshold value actuator having the third signal produced by the subtraction means coupled thereto, the first threshold value actuator halting the actuation of certain of the tuning elements within the transmitter in order to reduce anode dissipation when the third signal exceeds a predetermined first threshold; and,

a second threshold value actuator also having the third signal produced by said subtraction means coupled thereto, the second threshold value actuator switching off the transmitter when the third signal exceeds a second predetermined threshold level.

4,196,393
MICROWAVE SIGNAL DETECTOR

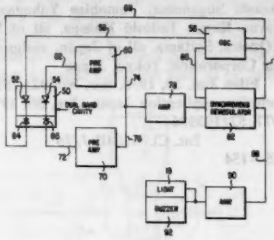
Harold P. Schweitzer, Fort Erie, Canada, assignor to Glar Ban Company, North Tonawanda, N.Y.

Filed Oct. 28, 1977, Ser. No. 846,327

Int. Cl.[2] H04B 1/00

U.S. Cl. 340—600 19 Claims

1. A microwave signal detector for receiving two frequency bands comprising a common microwave antenna, a waveguide cavity resonator coupled to said antenna, said waveguide cavity resonator having an electrically conductive divider which divides it lengthwise into two compartments, a first pair of lower frequency diodes in said waveguide resonator, a second pair of higher frequency diodes in said waveguide resonator, said first pair of diodes being in a first of said compartments and said second pair of diodes being in the second of said compartments, an oscillator circuit coupled to one of each pair of diodes, a detector circuit coupled to the other of each



pair of diodes, and an alarm coupled to the output of said detector circuit.

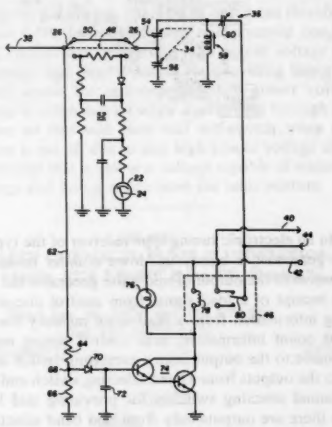
4,196,394
ANTENNA/LIKE IMPEDANCE MATCHER

Guy E. Adams, Monroe, N.Y., assignor to Solitron Devices, Inc., Tappan, N.Y.

Filed Feb. 14, 1977, Ser. No. 768,348

Int. Cl.[2] H04B 1/16; H01Q 1/34

U.S. Cl. 455—289 3 Claims



1. An antenna-line impedance matching device comprising:

a coaxial transmission line;

an antenna for said transmission line; and

a means to match impedance of the line and the antenna, said means including,

a switch circuit,

a relay circuit means,

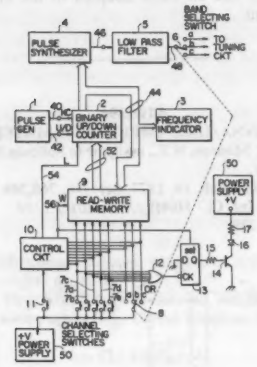
a capacitance circuit between said switch circuit and said relay circuit means having a pair of ganged variable capacitors in a parallel circuit with a coil and another variable capacitor between the parallel circuit of ganged variable capacitors and coil and said relay circuit means, said ganged variable capacitors being controllable independantly of said another variable capacitor, and

a circuit to measure reflected power connectable between said line and said capacitance circuit by said switch circuit.

4,196,395
PRESET STATE INDICATING UNIT IN AN ELECTRONIC TUNING TYPE RECEIVER

Masanao Okatani; Hiroshi Onishi; Yoshiaki Ishibashi; Reisuke Sato; Hisashi Suganuma; Tomohisa Yokogawa; Yoshiharu Ueki; Haruo Kama; Tadashi Kosuga, all of Kawagoe, and Tadashi Ogawa, Saitama, all of Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jun. 30, 1978, Ser. No. 921,155
Claims priority, application Japan, Jun. 30, 1977, 52/78080; Jun. 30, 1977, 52/103986
Int. Cl.[2] H04B 1/16
U.S. Cl. 455—154 4 Claims



1. In an electronic tuning type receiver of the type having a pulse generator, a binary up/down counter means normally responsive to the output of said pulse generator but responsive upon receipt of a load signal from control circuit means to tuning information from a read-write memory for providing output count information, said control circuit means being responsive to the output from a presetting switch and responsive to the outputs from a band selecting switch and a plurality of channel selecting switches for providing said load signal when there are outputs only from said band selecting switch and said plurality of channel selecting switches and for providing a write pulse to said read-write memory when there are outputs from said presetting switch and from said band selecting switch and said plurality of channel selecting switches, said read-write memory responsive to said output count information for storing said information upon receipt of said write pulse at an address designated by the outputs of both said band selecting switch and of said plurality of channel selecting switches, the improvement comprising:

a. coincidence means responsive to said outputs of said plurality of channel selecting switches for providing a first output signal when an output is present from at least one of said channel selecting switches;

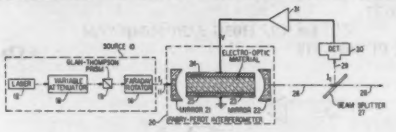
b. one-shot means responsive to said write pulse and to said first output signal for providing a second output signal when both said write pulse and said first output signal are present; and

c. indicator means responsive to said second output signal for providing a visual indication.

4,196,396
INTERFEROMETER APPARATUS USING ELECTRO-OPTIC MATERIAL WITH FEEDBACK

Peter W. Smith, Colts Neck, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation-in-part of Ser. No. 732,755, Oct. 15, 1976, abandoned. This application May 3, 1978, Ser. No. 902,733
Int. Cl.[2] H01S 3/10
U.S. Cl. 330—4.3 7 Claims

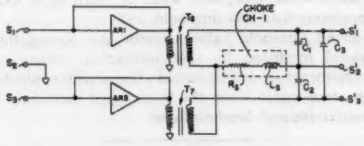


1. An amplitude-sensitive interferometer device comprising an interferometer cavity having two ends one of which is arranged to receive a single frequency linearly polarized single mode of input optical energy having a changing amplitude and the other of which is arranged to provide output optical energy whose amplitude is related to the amplitude of said input optical energy by a predetermined relationship, an electro-optic medium having terminals and positioned within said cavity so as to interact with optical energy present in said cavity, and photodetector means responsive to the optical energy in said cavity for coupling a voltage to the terminals of said electro-optic medium whose magnitude is a function of the intensity of the optical energy in said cavity, said two ends of said cavity are positioned such that the predetermined transmission through said cavity with zero voltage across said terminals at said single frequency is substantially equal to the minimum transmission obtainable for said cavity, whereby said predetermined relationship between the input optical energy amplitude and output optical energy amplitude is a bistable one in that two different output energy amplitudes are possible over a range of input optical energy amplitudes.

4,196,397
SYNCHRO POWER BUFFER AMPLIFIER

Emile R. Hill, Wayne, and Louis P. De Leo, Totowa Boro, both of N.J., assignors to The Singer Company, Little Falls, N.J.

Filed Oct. 12, 1978, Ser. No. 950,919
Int. Cl.[2] H03F 1/34, 3/68
U.S. Cl. 330—84 5 Claims



1. A synchro buffer amplifier comprising:

first and second input leads;

first and second amplifiers having respective inputs connected to said first and second input leads and having respective outputs;

first and second transformers each having a primary winding and a secondary winding, one side of the primary windings being respectively connected to the outputs of the respective amplifiers;

first and second feedback connections extending from said one side of the respective primary windings to the respective inputs of the first and second amplifiers;

first and second output leads respectively connected to one side of the secondary windings of the first and second transformers;

a third output terminal;

a common connection means including impedance means connecting said third output terminal to the other side of both of the secondary windings; and

a third input lead connected to a point of reference potential, and in which the other side of the primary winding of each of the first and second transformers is connected to said point of reference potential.

4,196,398
REGULATION OF A PLURALITY OF SUPERCONDUCTING RESONATORS

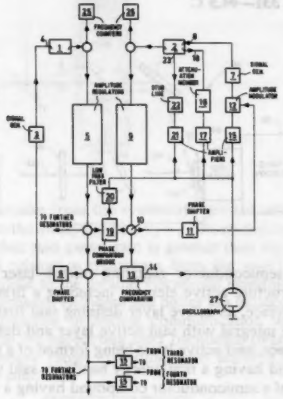
Werner Kuhn, Karlsruhe, Fed. Rep. of Germany, assignor to Gesellschaft fur Kernforschung m.b.H., Karlsruhe, Fed. Rep. of Germany

Filed Jan. 4, 1978, Ser. No. 866,844

Claims priority, application Fed. Rep. of Germany, Jan. 4, 1977, 2700122

Int. Cl.² H03B *3/04*

U.S. Cl. 331—9 **20 Claims**



1. Method for controlling the operation of at least one controlled superconducting resonator forming part of a single operating system, the resonator having elastically deformable structural elements, deformation of which alters the resonator frequency, to cause the at least one resonator to operate in frequency and phase synchronism with a reference frequency, comprising: supplying the at least one resonator with high frequency power independently of any other resonators which are part of the same operating system; setting the natural frequency of the at least one resonator to a predetermined value by adjusting the amplitude of the high frequency power, and aperiodically suppressing mechanical vibrations of the resonator structural elements by imposing an attenuation on such oscillations which is dependent on the oscillation velocity and then returning the frequency of the at least one controlled resonator to the predetermined natural frequency value.

4,196,399
REPETITIVELY PULSED, COLD CATHODE E-BEAM, SELF-SWITCH LASER

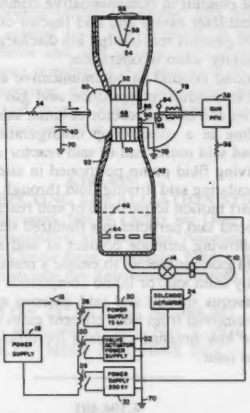
Charles M. Cason, III, and George J. Dezenberg, both of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 9, 1978, Ser. No. 867,743

Int. Cl.² H01S *3/00*

U.S. Cl. 331—94.5 G **6 Claims**

1. In a high powered gas laser comprising a housing having a flow channel therethrough for the flow of a laser gas mixture, said flow channel having a laser chamber therein that is defined by said housing and porous means at opposite ends of the laser chamber through which the laser gas must flow, said porous means being such as to prevent transverse spreading of electrons from said laser chamber and to act as an effective means to attenuate acoustic waves that are generated, means for applying a high power voltage across said laser chamber at a potential that is below the breakdown voltage of said laser gas mixture, and a cold cathode e-beam device mounted adjacent said laser chamber and circuit means for applying a potential to said e-beam device to provide a potential to said laser gas mixture sufficient to cause a current path to be established in



the laser chamber for electric pumping to occur and therefrom a lasing action from the laser mixture, said potential coupled through said e-beam device and said high power voltage discharging through said laser chamber for providing lasing action, and said means for applying said high power voltage causing a drop in value thereof while discharging through said laser chamber so that said laser will self-switch when said e-beam device is cut-off due to said high power voltage dropping to a potential that is below a voltage capable of maintaining a discharge and lasing action from the laser mixture.

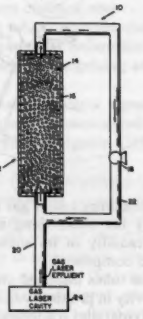
4,196,400
GAS LASER CHEMICAL PUMP FLUIDIZATION

William D. Martin, 8724 Edgehill Drive SE, Huntsville, Ala. 35802

Filed Jan. 30, 1978, Ser. No. 873,463

Int. Cl.² H01S *3/00*

U.S. Cl. 331—94.5 G **9 Claims**



1. In combination with a gas laser cavity, a chemical pump with a fluidized bed for reacting with the gaseous species of the laser effluent to remove said gaseous species by forming solid and/or liquid compounds which effectively remove said gase-

ous species to thereby maintain the low pressure required for efficient operation of said gas laser cavity, said chemical pump with a fluidized bed comprising:

(i) a reactor column having an inlet end and outlet end, said reactor column including a particle bed disposed within, said particle bed comprised of a reactive material in discrete particle form that is reactive with the gaseous species of said laser effluent, said reactor column when in operation additionally containing a driving fluid that is nonreactive with said reactive material;

(ii) a first conduit in communicative combination with said chemical laser cavity and said reactor column for receiving said gaseous species that are discharged from said gas laser cavity when in operation;

(iii) a second conduit in communicative combination with said first conduit intermediate said gas laser cavity and said inlet end of said reactor column, said second conduit extending in a closed-loop configuration between said inlet and said outlet end of said reactor column; and

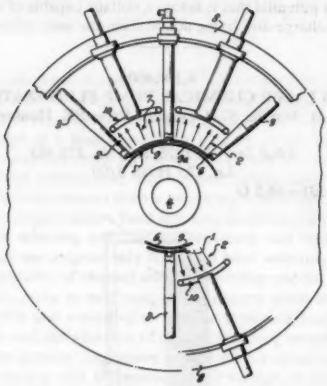
(iv) a driving fluid pump positioned in said second conduit for circulating said driving fluid through said particle bed to impart motion to particles of said reactive material and to suspend said particles in a fluidized state, said fluidized state allowing intimate contact of said reactive material and said gaseous species to enable a reaction to take place whereby solid and/or liquid compounds are formed from said gaseous species and said gaseous species are effectively removed from laser effluent gases to thereby maintain the low pressure required for efficient operation of said gas laser.

4,196,401

METHOD AND APPARATUS FOR INJECTING GAS INTO A LASER CAVITY

Joel M. Avidor, Rehovot, Israel, and Charles J. Knight, Cambridge, Mass., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 17, 1978, Ser. No. 896,946
Int. Cl.² H01S 3/00
U.S. Cl. 331—94.5 G **7 Claims**



2. Apparatus for injecting a laser gas into an axially-elongate annular laser cavity for establishing a substantially uniform flowfield directed radially of its annulus and parallel to its applied energy field comprising:

an array of porous tubes disposed circumferentially around said annular cavity in proximity to its radially-inward wall and in an axially-parallel spaced-relationship one with the other, and

header means for supplying pressurized laser gas to said tubes,

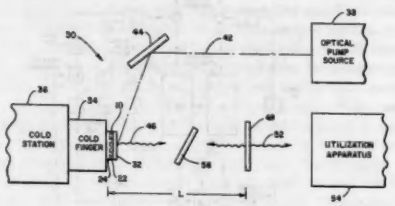
said tubes each having its tube walls formed of a low porosity material capable of injecting its pressurized gas supply into said cavity radially at a controlled injection velocity rate; said walls further being eccentric in form in that their circumferential extent increases from a relatively thin cross-section to a thicker one with said thicker wall portion being disposed nearest to said inner wall of the cavity, said eccentricity being tailored for producing a non-uniform normally-directed injection velocity distribution circumferentially of each tube whereby said injection velocity components can conglomerate in the nearfield region of said array to provide said substantially uniform radially-directed flowfield.

4,196,402

HIGHER POWER SEMICONDUCTOR RADIATING MIRROR LASER

Jack F. Butler, and Kenneth W. Nill, both of Lexington, Mass., assignors to Laser Analytics, Inc., Bedford, Mass.

Filed Feb. 25, 1977, Ser. No. 772,325
Int. Cl.² H01S 3/18
U.S. Cl. 331—94.5 C **20 Claims**



1. A semiconductor radiating mirror laser comprising a heterostructure active element including a first and a second major surface, an active layer defining said first surface and a substrate integral with said active layer and defining said second surface, said active layer being formed of a semiconductor compound having a first energy bandgap, said substrate being formed of a semiconductor compound having a second energy bandgap greater than said first energy bandgap, means for pumping said active layer with a pump beam incident upon said first surface to enable the emission of radiation from said active layer at a wavelength corresponding to said first bandgap, and reflective means spaced from said first surface of said active element and defining with said active element a resonant cavity for said radiation that is emitted essentially normal to said first surface, a portion of said radiation being extracted from said cavity as an output beam from said laser.

4,196,403

MULTI-LINE AMMONIA LASER UTILIZING INTRA-MOLECULAR ENERGY TRANSFER VIA A BUFFER GAS

Stephen M. Fry, Woodland Hills, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Aug. 22, 1977, Ser. No. 826,788
Int. Cl.² H01S 3/00
U.S. Cl. 331—94.5 G **4 Claims**

1. A laser comprising:

a housing;

a quantity of working gas contained within said housing, said working gas comprising ammonia and a buffer gas which is chemically non-reactive with ammonia;

a carbon dioxide laser tuned to the R(30) transition of the 001–020 band for providing a pumping laser beam at a wavelength of approximately 9.2 μm;

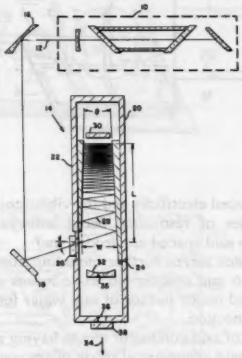
means for causing said pumping laser beam to irradiate said working gas to excite ammonia molecules from the symmetric ground vibrational manifold to the antisymmetric $\nu_2=1$ vibrational manifold;

the molecules of said buffer gas having an absence of energy

levels corresponding to wave numbers in the range from about $(725-kT)\ cm^{-1}$ to about $(1087+kT)\ cm^{-1}$, where T is the temperature of said working gas in degrees Kelvin, and k is Boltzmann's constant approximately given by 0.695 wave numbers per degree Kelvin;

said buffer gas being at a pressure such that the rate of rotational relaxation transitions in the $\nu_2=1$ vibrational manifold due to collisions between buffer gas and ammonia molecules is greater than the pump rate for exciting ammonia molecules from the symmetric ground vibrational manifold to the antisymmetric $\nu_2=1$ vibrational manifold, and such that said pump rate is greater than the rate of vibrational relaxation transitions from the $\nu_2=1$ vibrational manifold to the ground vibrational manifold due to collisions between ammonia and buffer gas molecules; and

an optical resonator in optical communication with said working gas for supporting laser oscillation over at least the wavelength range extending from about 9.3 μm to about 13.8 μm.

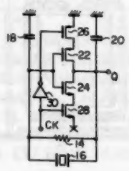


4,196,404

CRYSTAL OSCILLATOR HAVING LOW POWER CONSUMPTION

Heihachiro Ebihara, Tokorozawa, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Aug. 31, 1978, Ser. No. 938,487
Claims priority, application Japan, Sep. 8, 1977, 52/108090
Int. Cl.² H03B 5/36
U.S. Cl. 331—116 FE **2 Claims**



1. An oscillator circuit comprising:

a quartz crystal vibrator element;

a first P-MOS transistor having a drain terminal connected to a first terminal of said quartz crystal vibrator element and having a gate terminal connected to a second terminal of said quartz crystal vibrator element;

a first N-MOS transistor having a drain terminal connected to said first terminal of said quartz crystal vibrator element and having a gate terminal connected to said second terminal of said quartz crystal vibrator element;

a second P-MOS transistor having a drain terminal connected to a source terminal of said first P-MOS transistor and having a source terminal connected to a high potential of a power source;

a second N-MOS transistor having a drain terminal connected to a source terminal of said first N-MOS transistor and having a source terminal connected to a low potential of said power source; and

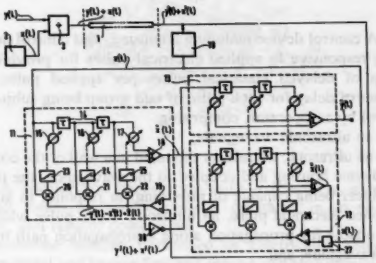
means for generating first and second control signals of mutually opposite phase and of mutually equal frequency of a predetermined periodic frequency lower than that of said quartz crystal vibrator element, said first control signal being applied to a gate terminal of said second P-MOS transistor and said second control signal being applied to a gate terminal of said second N-MOS transistor, said generating means for rendering said second P-MOS and said second N-MOS transistors in the same conductive/nonconductive state.

4,196,405

SELF-CORRECTING EQUALIZATION SYSTEM

Claude Le Dily, deceased, late of Epinay sur Orge, France; Le Dily, legal representative, by Josephine, Noumea, New Caledonia, and Jean-Claude Faye, Palaiseau, France, assignors to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed Oct. 31, 1977, Ser. No. 846,907
Claims priority, application France, Nov. 9, 1976, 76 33752
Int. Cl.² H03H 7/16; H04B 3/04
U.S. Cl. 333—16 **2 Claims**



1. A self-correcting equalisation system for compensating for the non-linear characteristics of a transmission channel, the system comprising, at the transmission end of the channel:

(a) a generator for producing control signals x(t) which are not correlated with the information signals y(t) to be sent over the transmission channel; and

(b) a summing circuit which adds the control signals x(t) to the information signals y(t) before the latter are input to the channel; and further comprising at the reception end of the channel:

(c) a generator producing control signals x(t) identical to those produced at the transmission end of the channel and in phase with the control signals x'(t) received over the channel;

(d) a first transversal filter comprising a cascaded reactive network with intermediate outputs and receiving at its input the control signals x(t) produced by the generator, the weighting coefficients of the first transversal filter being controlled so as to minimise the values of the functions correlating the signals at the terminals of its reactive network with the difference signals produced by its output signal x(t) and the signal y'(t)+x'(t) at the output from the transmission channel;

(e) a second transversal filter comprising a cascaded reactive network with intermediate outputs and receiving at its input the output signal x(t) of the first transversal filter, the weighting coefficients of the second transversal filter being controlled so as to minimise the values of the func-

tions correlating the signals at the terminals of its reactive network with the difference signal produced by its output signal x(t) and the control signal x(t) from the generator; and

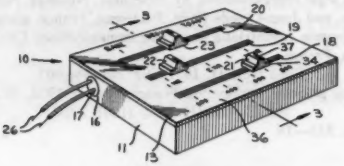
(f) a third transversal filter with the same reactive network and weighting coefficients as the second transversal filter, receiving at its input the difference signal produced by the signal $y'(t)+x'(t)$ at the output of the transmission channel and the output signal x(t) of the first transversal filter, the output of the third transversal filter constituting the output of the equalisation system.

4,196,406

ULTRASONIC CONTROL DEVICE

Robert J. Salem, Danbury, Conn., assignor to General Electric Company, New York, N.Y.

Filed Jun. 12, 1978, Ser. No. 914,527
Int. Cl.[2] G01D *21/00*; H01P *1/02*; H03H *7/30*
U.S. Cl. 333—141 **13 Claims**



1. A control device including a housing, said control device being responsive to applied electrical pulses for providing a group of delayed electrical pulses per applied pulse, the amount of delay for each pulse of said group being subject to control by an operator, comprising:

(a) an ultrasonic waveguide;

(b) an ultrasonic transducer mounted in a wall of the control device housing and coupled to the waveguide, the transducer being capable of providing, in response to an applied electrical pulse, an ultrasonic wave pulse which is suitable for propagation along a propagation path in the waveguide; and

(c) a plurality of movable ultrasonic wave reflectors coupled to the waveguide, each of the reflectors being movable to different selectable positions along the propagation path, each of said reflectors being of a width less than the width of the waveguides and being suitable for reflecting a part of a propagating ultrasonic wave pulse back to the transducer, the transducer being capable of responding to such reflected pulses sequentially to provide a group of electrical pulses; whereby each of the sequentially provided pulses occurs with a time delay, relative to an applied pulse, related to the position of a different one of the said reflectors relative to said transducer.

4,196,407

PIEZOELECTRIC CERAMIC FILTER

Kimio Masaie, Hakui, and Yoshio Murata, Ishikawa, both of Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Nov. 22, 1978, Ser. No. 962,904
Claims priority, application Japan, Dec. 26, 1977, 52-160802
Int. Cl.[2] H03H *9/26, 9/32, 9/06*
U.S. Cl. 333—191 **7 Claims**

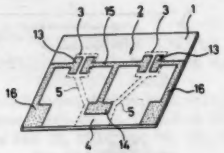
1. A piezoelectric ceramic multiple mode filter, comprising:

a thin wafer of a piezoelectric ceramic material having first and second parallel major surfaces;

a plurality of spaced electrodes formed on said first major surface of said wafer;

conductor means formed on said second major surface of said wafer, said conductor means including counter-electrode means located in opposition to said spaced electrodes;

said spaced electrodes and said counter-electrode means coacting with the portion of said piezoelectric ceramic material located between said spaced electrodes and said counter electrode means to form resonator elements having several modes of resonance, the vibrations of one of said modes of resonance being symmetrical with respect



to said spaced electrodes and the vibrations of the other of said modes of resonance being anti-symmetrical with respect to said spaced electrodes, and

said conductor means further including connecting means coupled to said counter-electrode means and located on said second major surface of said wafer for external electrical connection,

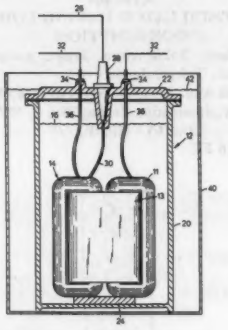
one portion of said conductor means having a resistance for damping said symmetrical mode of resonance.

4,196,408

HIGH TEMPERATURE TRANSFORMER ASSEMBLY

Edwin A. Link, Waukesha, Wis., assignor to RTE Corporation, Waukesha, Wis.

Continuation of Ser. No. 433,053, Jan. 14, 1974, abandoned, which is a continuation-in-part of Ser. No. 292,670, Sep. 27, 1972, abandoned. This application Jul. 28, 1975, Ser. No. 599,372
Int. Cl.[2] H01F *27/02*
U.S. Cl. 336—94 **7 Claims**



1. A liquid, Class H, power transformer comprising:

a casing,

a core and coil assembly having an operating temperature in excess of 200° C. supported within said casing,

said assembly including an insulating barrier material,

means in said casing for terminating said core and coil assembly externally of said casing,

a saturated hydrocarbon insulating liquid in said casing completely covering said core and coil assembly,

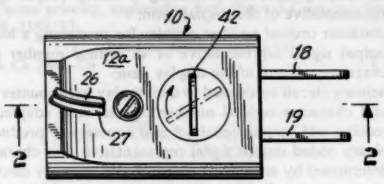
said liquid being compatible with the barrier material for said core and coil assembly and having a vapor pressure at 200° C. less than 10 millimeters of mercury and a flash point in excess of 230° C.

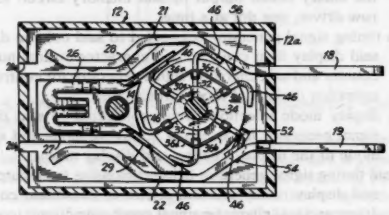
4,196,409

MULTIPLE FUSE DEVICE

Hisashi Juba, Rye, N.Y., assignor to Minami International Corporation, New York, N.Y.

Filed Jun. 22, 1978, Ser. No. 917,910
Int. Cl.[2] H01H *85/02*
U.S. Cl. 337—198 **10 Claims**





1. In a multiple fuse device connectable to an electrical source and at least one selected load circuit for protecting at the selected load circuit from an overcurrent condition, the device having a multiple fuse assembly rotatable about an axis within the device in fixed directions through at least a certain predetermined angle and having at least two rotational positions in which at least one fresh fuse is connected between the source and the load circuit, the improvement characterized by the assembly having a body with a conductor carrying portion having a plurality of radially extending angularly spaced apart separate conductors carried by said portion, at least three adjacent ones of said conductors being connected in a set in series to its adjacent conductor by fuse means and at least one of the conductors in this set being connected with the source and an adjacent conductor simultaneously being connected with the load circuit to fusibly connect one line of the load circuit with the electrical source when the assembly is in a selected rotational position.

4,196,410

VARIABLE RESISTOR

Masao Kasajima, and Kozo Magami, both of Miyagi, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Jan. 31, 1978, Ser. No. 874,014
Claims priority, application Japan, Feb. 3, 1977, 52-12126[U]
Int. Cl.[2] H01C *10/46*
U.S. Cl. 338—185 **5 Claims**

1. A variable resistor suitable for use in a balance control circuit, comprising

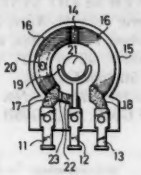
a substrate plate formed from an electrically insulating material;

an elongate resistance body carried by said substrate plate;

an elongate conductor applied on the surface of said substrate plate and underlying generally half the length of said resistance body, said conductor having a first end portion contacting the approximate central portion of said resistance body, a second end portion and an intermediate portion interconnecting said first and second end portions;

a film of electrically insulating material extending between the intermediate portion of said conductor and the portion of said resistance body lying thereover;

first and second terminals electrically connected, respectively, to end portions of said resistance body; and



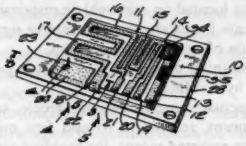
a slide slidably contacting a collector connected electrically to a third terminal and including a contactor adapted to slidably engage said resistance body.

4,196,411

DUAL RESISTOR ELEMENT

Lance R. Kaufman, Mequon, Wis., assignor to Gentron Corporation, Milwaukee, Wis.

Filed Jun. 26, 1978, Ser. No. 919,013
Int. Cl.[2] H01C *1/012*
U.S. Cl. 338—314 **5 Claims**



1. A resistor for cooperating with a relatively movable contact means to provide steps of resistance in an electric circuit, said resistor comprising:

a substrate member comprised of electrically insulating material and having first and second opposite parallel and planar major surfaces and edge surfaces extending between the major surfaces,

a plurality of strips of electrically resistive material bonded to said first major surface, said strips being electrically continuous and being disposed in a zigzag arrangement on said first surface, the ends of said strips forming said zigzag arrangement being spaced from each other and being adjacent one edge of said substrate, said ends constituting terminals for cooperating with contact means,

a plurality of additional strips of electrically resistive material bonded to said first major surface, said additional strips extending in electrical continuity from said zigzag strips intermediate their ends, said additional strips having ends terminating adjacent said one edge coplanar with and in spaced relation with said ends of said zigzag strips, the ends of said additional strips also constituting terminals for cooperating with contact means to provide said steps of resistance,

another plurality of strips of electrically resistive material bonded to said second major surface, said other strips being electrically continuous and being disposed in a zigzag arrangement on said second surface, said last named strips having opposite ends one of which extends from said second surface along said one edge and to said first surface to form a terminal adjacent said one edge and in spaced relation with respect to said other ends which constitute terminals for cooperating with contact means, the other of said opposite ends of said other plurality of

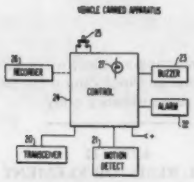
strips on said second surface extending along said one edge to join with one terminal end of said zigzag arrangement on said first surface.

4,196,412

DRIVER ALERT SYSTEM

Mark H. Sluis, Pittsford; John H. Auer, Jr., Fairport; Carl G. Shook, Pittsford; Robert F. Anderson, and David B. Rutherford, both of Rochester, all of N.Y., assignors to General Signal Corporation, Stamford, Conn.

Filed Jan. 16, 1978, Ser. No. 869,740
Int. Cl.[2] G08G *1/02*; G08B *23/00*
U.S. Cl. 340—32 **23 Claims**



1. A driver alert system for a vehicle moving under control of an operator to insure operator attentiveness at a wayside location which is potentially dangerous comprising:

signalling means mounted on said wayside in advance of said location in the direction of vehicle travel,

first means located on said vehicle responsive to said signalling means for producing a distinctive signal in response to detection of said signalling means,

sensible warning means on said vehicle providing a signal sensed by a vehicle operator,

operator-actuated means on said vehicle, and

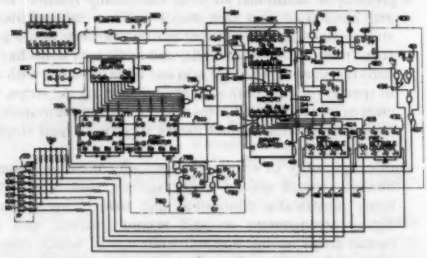
control means, responsive to said first means and to said operator-actuated means, for enabling said sensible warning means in response to said first means detection of said signalling means in the absence of prior operation of said operator-actuated means, and for maintaining said sensible warning means operated as long as said operator-actuated means is not actuated.

4,196,413

DOT-MATRIX TYPE VEHICLE CONDITION DISPLAY APPARATUS

Kunihiro Sowa, Okazaki, Japan, assignor to Nippon Soken, Inc., Nishio, Japan

Filed Oct. 5, 1978, Ser. No. 949,387
Claims priority, application Japan, Nov. 29, 1977, 52-14386
Int. Cl.[2] B60Q *11/00*; G08B *23/00*; G09F *9/32*
U.S. Cl. 340—52 F **5 Claims**



1. A dot-matrix type vehicle condition display apparatus comprising:

an m columns×n rows dot matrix type display means;

a row driver connected to said display means for selectively driving the rows of said display means;

a column driver connected to said display means for sequentially driving the columns of said display means one at a time;

a circuit for selecting a display item;

a display item counter connected to said circuit for selecting the display item for producing a binary output signal representative of the display item;

a character ordinal number counter for producing a binary output signal representative of an ordinal number of a character column of the display item;

a memory circuit connected to said display item counter and said character ordinal number counter and adapted to receive said output signals of said counters to produce a binary coded output signal representative of a character determined by an address signal of said memory circuit;

a character signal generator connected to said memory circuit and said row driver for sequentially supplying column dots composing the character corresponding to the binary coded output of said memory circuit to said row driver, one dot at a time;

a timing signal generator connected to said column driver, said display item counter, said character ordinal number counter and said character signal generator for controlling operation timings of those circuits; and

a display mode selection circuit connected to said timing signal generator for selecting a moving mode and a stop mode of the display item on said display means;

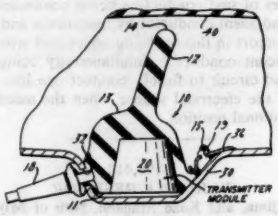
said timing signal generator being responsive to an output of said display mode selection circuit to cause said column driver and said character signal generating circuit to select the moving mode or the stop mode of the display item on said display means.

4,196,414

INTEGRAL TIRE INFLATION VALVE AND TIRE HEIGHT SENSOR

George H. Muller, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 13, 1978, Ser. No. 968,944
Int. Cl.[2] B60C *23/06*
U.S. Cl. 340—58 **9 Claims**



1. In a low profile height warning system for use on an inflatable pneumatic tire of a vehicle including:

a wheel having a rim for mounting said inflatable pneumatic tire;

a tire inflation valve extending through said wheel;

an RF transmitter mounted on said wheel within said tire;

and a tire height sensor probe extending from said transmitter towards the outermost periphery of said tire, wherein said transmitter includes a piezoelectric power source responsive to said probe contacting said tire when the profile height of said tire is below a predetermined value;

an improvement comprising:

said inflation valve, said transmitter and said probe being molded as a single integral structure.

4,196,415

AUTOMOTIVE TURN SIGNAL FLASHER UNIT HAVING INTEGRAL ACOUSTIC SIGNAL MEANS

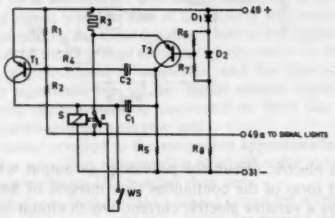
Gerhard Haar, Leinfelden, and Josef Swoboda, Bietigheim-Bissingen, both of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Nov. 16, 1976, Ser. No. 742,249

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1975, 2558717

Int. Cl.[2] B60Q *1/34, 5/00*

U.S. Cl. 340—75 1 Claim



1. A directional signal flasher device for automotive vehicles comprising, in combination:

an astable multivibrator transistor oscillator for coupling between a source of operating potential and a point of reference potential with respect to said operating potential, said oscillator being selectively further coupled to an external flasher lamp, and said oscillator being responsive to the current coupled through said oscillator wherein said oscillator provides a pulsating output signal at an output thereof when the level of said current exceeds a given value;

a mechanical switching relay having an energizing coil and a normally open set of contacts said normally open set of contacts being coupled between said source of operating potential and said external flasher lamp and said coil being coupled between said output of said oscillator and said point of reference potential and responsive to said output signal to provide a contact closure in accordance with said output signal for controlling said external flasher lamp;

wherein said switch relay further comprises an integral electro-mechanical buzzer which generates an acoustical signal during the operation of said relay; and,

wherein said relay further includes a normally closed set of contacts and means for selectively serially coupling said normally closed contacts between said coil and said source of operating potential wherein said relay is operated in a selfinterrupting mode when said normally closed contacts are coupled to said source of operating potential.

4,196,416

SYNCHRONIZATION APPARATUS WITH VARIABLE WINDOW WIDTH AND SPACING AT THE RECEIVER

Hermann Stein, Munich, Fed. Rep. of Germany, assignor to Steuerungstechnik GmbH, Munich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 829,311, Aug. 31, 1977, Pat. No. 4,137,522. This application Nov. 29, 1978, Ser. No. 964,708

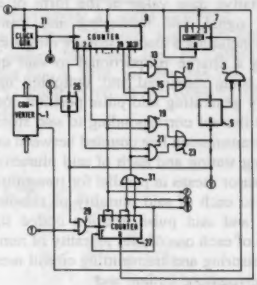
Claims priority, application Fed. Rep. of Germany, Sep. 1, 1976, 2639363

Int. Cl.[2] H04Q *9/00*

U.S. Cl. 340—147 R 13 Claims

1. System for synchronizing locally generated synchronization signals to received transmitter synchronization signals, comprising, in combination, transmitting means for transmitting a sequence of transmitter synchronization signals and a message having a starting end and a terminating end said sequence of transmitter synchronization signals comprising a plurality of transmitter synchronization signals spaced from each other at predetermined transmitter time intervals and at least one additional transmitter synchronization signal spaced from an adjacent one of said transmitter synchronization signals by a changed time interval unequal to said transmitter time interval for signifying at least one of said message ends;

and a receiver comprising receiving means for receiving said sequence of transmitter synchronization signals and said message and furnishing a sequence of received synchronization signals in response thereto, window signal generating means for generating a sequence of window signals spaced in time from each other by a window spacing corresponding to said predetermined transmitter time interval,



coincidence circuit means connected to said window signal generating means and said receiving means for furnishing a coincidence output signal in response to a received synchronization signal occurring in the absence of said window signal and retiming said sequence of window signals in response thereto,

and local synchronization signal furnishing means connected to said window signal generating means for furnishing said locally generated synchronization signals at a predetermined synchronization time in each of said window signals.

4,196,417

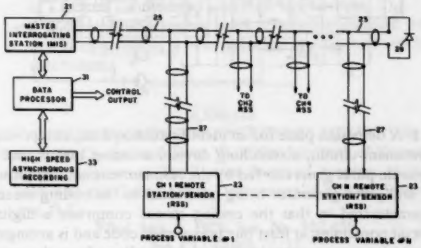
SINGLE TRANSMISSION LINE INTERROGATED MULTIPLE CHANNEL DATA ACQUISITION SYSTEM

George E. Fasching, and Thomas W. Keech, Jr., both of Morgantown, W. Va., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 23, 1977, Ser. No. 854,444

Int. Cl.[2] H04Q *9/00*; G08C *15/06*

U.S. Cl. 340—151 5 Claims



1. A single transmission line interrogated multiple channel data acquisition system, comprising:

a master interrogating station means for generating and transmitting a repeating interrogating signal including individual digital address codes for separately addressing a plurality of data channels and receiving quantitative data

valves corresponding to a measured value from each separately addressed channel on a time shared basis;

a plurality of remote station/sensor means corresponding to said plurality of data channels, each remote station/sensor means including means for generating its own digital address code and comparing it with each address code transmitted by said master interrogating station, generating a transmit command signal when the transmittal address matches the address generated by said remote station/sensor, and a measuring and transmitting circuit means responsive to said transmit command signal for measuring and transmitting the corresponding channel quantitative data value in the form of a pulse position coded signal, said measuring and transmitting circuit means including a charge storage means for receiving and storing a charge proportional to said quantitative data value being measured and switching means for subsequently generating said pulse position coded signal at an output thereof corresponding to said stored charge;

a single transmission line coupled between said master interrogating station and each of said plurality of remote station/sensor means in parallel for transmitting said address codes to each of said plurality of remote station/sensor means and said pulse position coded signals from the output of each one of said plurality of remote station/sensor measuring and transmitting circuit means to said master interrogating station; and

a termination diode connected at the remote end of said transmission line.

4,196,418

DETECTION PLATE FOR AN IDENTIFICATION SYSTEM

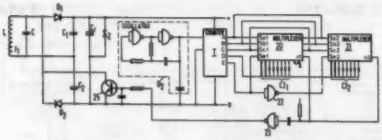
Harm J. Kip, Lichtenvoorde, and Tallienco W. H. Fockens, Eibergen, both of Netherlands, assignors to N.V. Nederlandsche Apparatenfabriek NEDAP, Groenlo, Netherlands

Filed Oct. 31, 1977, Ser. No. 847,148

Claims priority, application United Kingdom, Nov. 1, 1976, 45362/76

Int. Cl.[2] H04Q 7/00; G01S 9/56

U.S. Cl. 340—152 T **8 Claims**



1. A detection plate for an identification system, comprising a resonant circuit, a switching device, a coding means, and a separate pulse generator fed by the resonant circuit, the output of said pulse generator being connected to the coding means characterized in that the coding means comprises a digital circuit containing at least one preselected code and is arranged to receive, in operation, both a supply voltage from the resonant circuit via rectifier means and control pulses from said separate pulse generator which are processed by said coding means for providing output signals according to said at least one preselected code, said output signals being fed to said switching device for affecting the resonance of said resonant circuit.

4,196,419

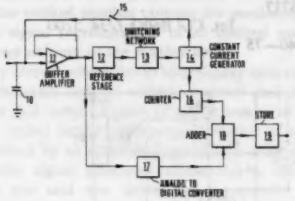
ANALOG TO DIGITAL CONVERTER

Kenneth R. Brown, Kirknewton, Scotland, assignor to Ferranti Limited, Hollinwood, England

Filed Dec. 13, 1977, Ser. No. 860,190

Int. Cl.[2] H03K 13/02

U.S. Cl. 340—347 AD **3 Claims**



1. An electric circuit for providing an output which is a digitised form of the continuous time integral of data represented by a variable electric current, which circuit includes a capacitor to which may be applied a variable direct current proportional to the instantaneous value of a variable quantity, a buffer amplifier having an input connected to the capacitor a reference stage connected to an output of the buffer amplifier operable to define upper and lower voltage levels and responsive to the voltage across the capacitor to deliver a first control signal whenever the said voltage reaches the upper voltage level and a second control signal whenever the said voltage reaches the lower voltage level, charging means responsive to either one of the first and second control signals to apply to the capacitor a pulse of known constant charge in such a sense that the voltage across the capacitor changes to a value near to the voltage level giving rise to the other control signal, counting means for counting the number and polarity of the charge pulses applied to the capacitor by the charging means, an analogue-to-digital converter connected to the output of the buffer amplifier operable to sample the voltage across the capacitor at a rate such that the time interval between successive samples is greater than the duration of a charge pulse, and an adder for combining the output of the counting means with the instantaneous output of the analogue-to-digital converter.

4,196,420

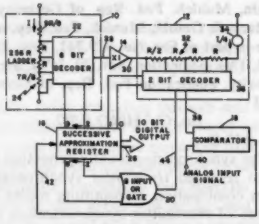
EXPANDED ANALOG-TO-DIGITAL CONVERTER HAVING ONE-HALF LSB SHIFT

Daniel D. Culmer, and Ronald W. Russell, both of Sunnyvale, Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed May 30, 1978, Ser. No. 910,506

Int. Cl.[2] H03K 13/03

U.S. Cl. 340—347 AD **4 Claims**



1. An analog-to-digital converter, comprising

a first digital-to-analog converter for converting the most significant bits of a digital output signal having a given

number of bits to a first analog reference signal having a value that is proportional to the value of the most significant bits minus one-half the least significant bit of the digital output signal whenever the value of the most significant bits is other than zero;

a second digital-to-analog converter for converting the least significant bits of the digital output signal to a second analog reference signal;

a comparator for comparing an analog input signal with the sum of the analog reference signals;

a successive approximation register connected to be driven by the comparator for successively providing the bits of the digital output signal beginning with the most significant bit in accordance with said comparison of the analog input signal with the sum of the analog reference signals, for providing the most significant bits of the digital output signal to the first digital-to-analog converter to drive the first digital-to-analog converter, and for providing the least significant bits of the digital output signal to the second digital-to-analog converter to drive the second digital-to-analog converter; and

logic means coupled to the successive approximation register for providing an indication of whether the value of the most significant bits is other than zero;

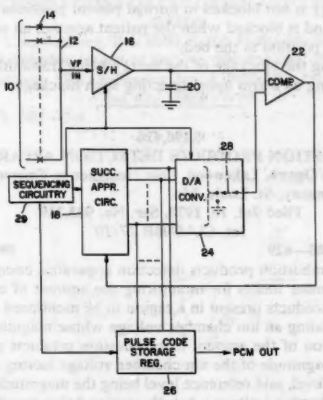
wherein the second digital-to-analog converter is responsive to the indication by the logic means for causing the second analog reference signal to have a value that is proportional to the value of the least significant bits whenever the value of the most significant bits is other than zero, and a value that is proportional to the value of the least significant bits minus one-half the least significant bit of the digital output signal whenever the value of the most significant bits is zero.

4,196,421

PCM ENCODER WITH VARIABLE SET-UP INTERVALS

Calvin H. Decoursey, and Todd V. Townsend, both of Reno, Nev., assignors to Lynch Communication Systems, Inc., Reno, Nev.

Filed Jan. 3, 1978, Ser. No. 866,337
Int. Cl.[2] H03K *13/03*
U.S. Cl. 340—347 AD **2 Claims**



1. Successive approximation apparatus for encoding an analog voice-frequency sample into an eight-bit pulse code format suitable for transmission over a PCM telephone system having a fixed master clock cycle, characterized thereby:

that prior to the encoding of each voice-frequency sample, the sign bit and the most significant bit are preset to logic "1" while all other bits are preset to logic "0"; and

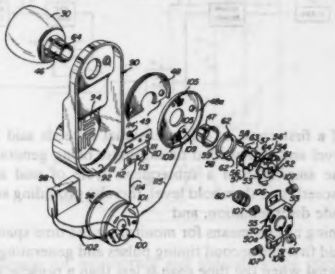
that at least three different set-up interval lengths are provided for the setting up of the various reference signals used in the successive approximations, the interval length used for the setting up of any given reference signal being always an integral multiple of said master clock cycle, and being a relatively long set-up interval for setting up the reference signal used in determination of the sign bit, an equal set-up interval plus a short set-up interval for setting up the reference signal used in determination of the most significant bit, an intermediate length interval for setting up each of the reference signals from the next three most significant bits, and a short interval for setting up each of the reference signals for the last three significant bits.

4,196,422

INTRUSION ALARM SYSTEM

David L. Swigert, and Ronn G. Smith, both of Ft. Collins, Colo., assignors to Teledyne Industries, Inc., Ft. Collins, Colo.

Filed Jan. 3, 1978, Ser. No. 866,789
Int. Cl.[2] E05B *45/06, 45/12;* **G08B** *13/08*
U.S. Cl. 340—542 **30 Claims**



1. In an intrusion alarm system:

a closure having a latch assembly that includes a knob on one side of said closure for enabling opening of said closure as a result of operation of said assembly, said operation requiring physical action by a person with respect to said knob;

a lock mechanism included within said knob and selectively operable to lock or unlock said latch assembly;

an alarm apparatus associated with said latch assembly and disposed on the side of said door opposite said one side, said alarm apparatus including a battery, a generator powered by said battery and responsive to an input signal for developing a sound signal, and a transducer responsive to said sound signal for delivering an audible warning signal;

means responsive to said physical action for delivering said input signal to said generator when said latch assembly is in a locked condition of said lock mechanism;

and said responsive means being effectively disabled when said latch assembly is in an unlocked condition of said lock mechanism.

4,196,423

ACOUSTIC EMISSION INTRUSION DETECTOR

Donald W. Carver, and Jerry W. Whittaker, both of Knoxville, Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

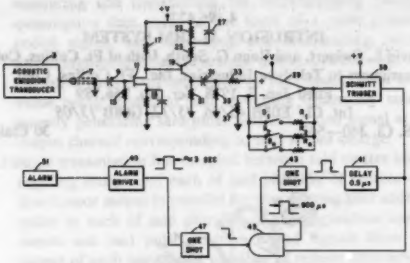
Filed Aug. 9, 1978, Ser. No. 932,150
Int. Cl.[2] G08B *13/22*
U.S. Cl. 340—566 **4 Claims**

1. An acoustic emission intrusion detector for monitoring a secured structure and generating an alarm upon detection of acoustical signals generated durng forcible entry into said structure while minimizing false alarms based on signal amplitude and frequency discrimination, comprising:

an acoustic emission transducer mounted to sense vibrations generated in said structure and generating an a.c. signal at an output thereof in response to said vibrations;

a preamplifier circuit means responsive to the output of said transducer for providing preselected amplification of said a.c. signal;

signal amplitude discriminating means responsive to the output of said preamplifier for generating first and second successive timing pulses when the signal from said preamplifier exceeds a preselected amplitude threshold level, said first timing pulse being generated when the amplitude



of a first cycle of said a.c. signal exceeds said threshold level and said second timing pulse being generated when the amplitude of a subsequent cycle of said a.c. signal exceeds said threshold level, thereby providing said amplitude discrimination; and

a timing circuit means for monitoring the time span between said first and second timing pulses and generating an alarm signal when the time span is less than a preselected value, thereby providing said frequency discrimination, and means responsive to said alarm signal for providing an alarm indication.

4,196,424

LOCK TAG

Robert D. Williamson, 7350 NW. First Ct., Pembroke Pines, Fla. 33024

Continuation-in-part of Ser. No. 689,336, May 24, 1976, Pat. No. 4,087,802. This application Jan. 19, 1978, Ser. No. 870,673
Int. Cl.² G08B *21/00*; A44B *9/00*
U.S. Cl. 340—572 **14 Claims**

1. In a telltale tag including a stimulus to activate an electronic surveillance system, and having an improved means to selectively attach, close and lock the tag to merchandise the improvement comprising:

a housing containing therein a bore and a substantially uniform width slot in open communication with the bore;

a bar in close fitting but movable internal relationship with the bore, said bar having a prong to pierce the merchandise and a resiliently depending dog of slightly greater length than the width of the slot in which it resides, said dog being urged toward a position so it will jam in the slot locking the tag when unauthorized opening of the tag is attempted; and

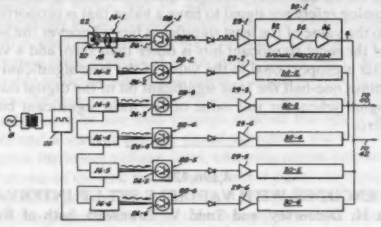
a cavity in the housing in which the prong at least partially protectly resides when the tag is closed.

4,196,425

PATIENT ACTIVITY MONITORING SYSTEM

Clyde E. Williams, Jr., P.O. Box 527, Rancho Santa Fe, Calif. 92067, and David S. Weekly, Encinitas, Calif., assignors to by said David S. Weekly said Clyde E. Williams, Rancho Santa Fe, Calif.

Filed Jul. 10, 1978, Ser. No. 923,220
Int. Cl.² G08B *21/00*
U.S. Cl. 340—573 **28 Claims**



28. A method of monitoring unauthorized or excessive movements of a patient on a bed, said method including the steps of:

transmitting energy across the bed to locations such that the energy is not blocked in normal patient positions on said bed and is blocked when the patient assumes an unauthorized position in the bed,

detecting the blockage of the energy being transmitted, and activating an alarm upon detecting such blockage.

4,196,426

COMBUSTION PRODUCTS DETECTION APPARATUS

Francis T. Ogawa, Lakewood, Colo., assignor to Emerson Electric Company, St. Louis, Mo.

Filed Jul. 10, 1978, Ser. No. 923,219
Int. Cl.² G08B *17/10*
U.S. Cl. 340—629 **19 Claims**

1. A combustion products detection apparatus, comprising:

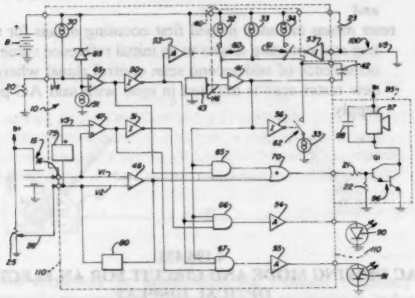
ion chamber means for monitoring the amount of combustion products present in a region to be monitored and for generating an ion chamber voltage whose magnitude is a function of the amount of combustion products present, the magnitude of the ion chamber voltage having a reference level, said reference level being the magnitude of the ion chamber voltage when the region being monitored is substantially free of combustion products, said ion chamber voltage changing in magnitude in a first sense as the amount of combustion products being monitored increases;

oscillator means for producing oscillator output pulses at predetermined rates;

test means operatively connected to the oscillator and having two states, said test means in its first state causing the oscillator to produce output pulses at a first repetition rate; and in its second state to produce oscillator output pulses

at a second repetition rate different than said first repetition rate, said test means enabling the apparatus to be tested for proper operation;

first means for producing a perceptible output connected to the oscillator and operable to generate perceptible pulses corresponding to the output pulses of the oscillator means whereby the first means produces perceptible pulses at said first repetition rate whenever the test means is in its first state and produces perceptible pulses at said second repetition rate when said apparatus is in its second state;



means for generating an alarm reference voltage having a magnitude which differs in said first sense from the reference level of the ion chamber voltage by a predetermined amount;

first comparator means for comparing the ion chamber voltage with the alarm reference voltage and generating an alarm signal whenever the ion chamber voltage changes in said first sense beyond the alarm reference voltage; and,

second means for producing a perceptible output connected to receive said alarm signal and for generating a perceptible output upon the receipt of same.

4,196,427

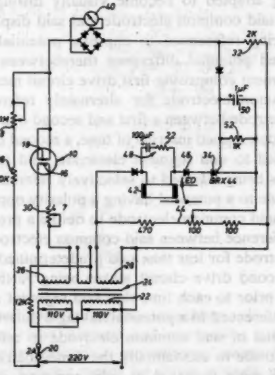
METHOD AND APPARATUS FOR MEASURING LOW CONCENTRATIONS OF CHLORINE AND CHLORINE OXIDE

Harry I. A. Rudberg, Box 6040, S-102 31 Stockholm, Sweden

Continuation-in-part of Ser. No. 709,424, Jul. 28, 1976, abandoned. This application Jan. 9, 1978, Ser. No. 867,706

Int. Cl.² C08B *17/10*

U.S. Cl. 340—634 **10 Claims**



1. A method of detecting the presence of low concentrations of chlorine and compounds thereof in air, comprising exposing a sensor element in the form of a pair of spaced noble metal filaments embedded in a body of titanium oxide to gaseous chlorine or compounds thereof in air, energizing one of said filaments with a voltage of at least 90 volts, monitoring the resistance of the other said filament, and detecting the presence of gaseous chlorine or compounds thereof upon an increase in the resistance of the other said filament during the monitoring step.

4,196,428

DEVICE FOR MONITORING OPERATIONAL READINESS OF A GAS-MEASURING INSTRUMENT

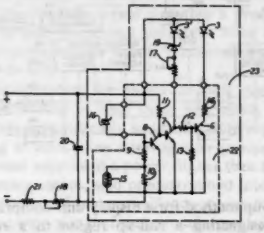
Wolfgang Höht; Ingo Reichert, and Joachim Weidinger, all of Berlin, Fed. Rep. of Germany, assignors to Auergesellschaft GmbH, Berlin, Fed. Rep. of Germany

Filed Feb. 16, 1978, Ser. No. 878,421

Claims priority, application Fed. Rep. of Germany, Feb. 22, 1977, 2707569

Int. Cl.² G08B *29/00*

U.S. Cl. 340—636 **6 Claims**



1. A device for monitoring and indicating the operational readiness of a gas-measuring instrument fitted with a built-in chargeable battery, the device comprising a housing provided with a transparent wall area, luminescent diodes disposed in said housing and visible through said wall area, said diodes emitting different colors when energized, an electrical flip-flop circuit containing said diodes for respective energization thereof in different switching states of said flip-flop circuit, rheostat means for adjusting the switch-over values of said circuit, and a pair of input leads for connecting a chargeable battery to the circuit, said circuit including a rheostat connected with one of the luminescent diodes for adjusting the switch-off threshold of said one diode, and a Zener diode located in the circuit of said one diode to determine the switch-on range of said one diode.

4,196,429

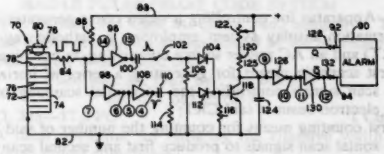
MOTION DETECTOR

Curtis H. Davis, 3333 Sand Point Rd., Fort Wayne, Ind. 46809

Filed Nov. 25, 1977, Ser. No. 854,522

Int. Cl.² G08B *21/00, 13/02*

U.S. Cl. 340—669 **9 Claims**



1. A motion detector comprising;

a detector housing;

first means for generating a signal upon a predetermined movement of said housing;

second means coupled to said first means for processing said

signal to provide a first signal upon a predetermined housing movement in a predetermined time period and a second signal upon an absence of housing movement during a predetermined time period;

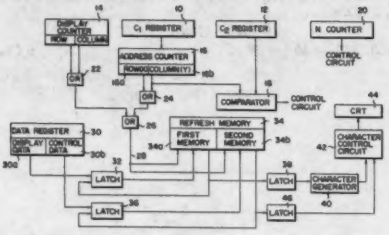
third means coupled to said second means for generating an alarm in response to a selectable one of said first and second signals.

4,196,430

ROLL-UP METHOD FOR A DISPLAY UNIT

Masatoshi Denko, Ome, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Tokyo, Japan

Filed Jan. 19, 1978, Ser. No. 871,112
Claims priority, application Japan, Jan. 21, 1977, 52-5482
Int. Cl.[2] G06K *15/20*
U.S. Cl. 340—726 **6 Claims**



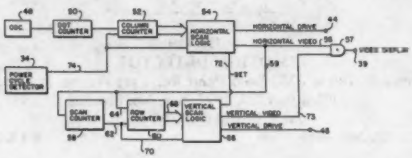
1. A roll-up method for a display unit comprising supplying data for designating a roll-up region to a roll-up address counter to designate an address for a refresh memory storing a character display data portion and a control data portion and modifying the contents of said address counter to modify the stored information of said refresh memory in a fly-back time of the display unit by means of a roll-up instruction, thereby rolling up said region.

4,196,431

SYNCHRONOUS RASTER SCAN APPARATUS FOR DISPLAY DEVICE

Ernest P. Lee, Acton, Mass., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Feb. 28, 1977, Ser. No. 773,040
Int. Cl.[2] G06F *3/14*
U.S. Cl. 340—749 **6 Claims**



1. Apparatus for controlling a video raster generator in an information display system employing a cathode ray tube (CRT) and an AC power source comprising, in combination:

first scanning means for generating a series of horizontal scan signals controlling the horizontal scanning of the electron beam in said CRT;

first counting means for counting the number of said horizontal scan signals to produce first and second scan control signals, said first scan control signal indicating the completion of a raster scan;

inhibit means responsive to said first scan control signal for terminating the operation of said first counting means on completion of said raster scan;

detection means for detecting the occurrence of a cycle of AC power applied by said power source and for generating a synchronization signal on initiation of each AC power cycle;

means controlled by said synchronization signal for resetting said first scanning means to begin a new horizontal scan signal and for disabling said inhibit means, whereby said first counting means continues operation to generate said second scan control signal;

second scanning means responsive to said second scan control signal for producing a vertical retrace signal returning said electron beam vertically to a raster starting position, and

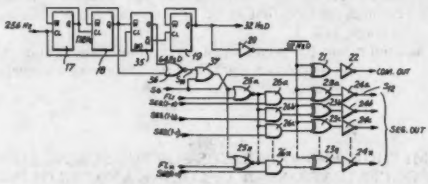
reset means included in said first counting means for resetting said counting means to an initial reference value after occurrence of said second scan control signal whereby a new raster scan is initiated in sync with said AC power supply.

4,196,432

AC DRIVING MODE AND CIRCUIT FOR AN ELECTRO-OPTICAL DISPLAY

Hiroyuki Chihara, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Mar. 29, 1978, Ser. No. 891,427
Claims priority, application Japan, Mar. 29, 1977, 52-35886
Int. Cl.[2] G06F *3/14*
U.S. Cl. 340—784 **10 Claims**



1. In a driving circuit for an electro-optical display cell, each said display cell including a common electrode, a segment electrode spaced from said common electrode and visually distinguishable means disposed between said common electrode and segment electrode, said visually distinguishable means being adapted to become visually distinguishable in response to said common electrode and said display segment electrode being referenced to opposite potentials so that a predetermined potential difference therebetween is defined, the improvement comprising first drive circuit means coupled to said common electrode for alternately referencing said common electrode between a first and second opposite potential for a predetermined interval of time, a second drive circuit means coupled to said segment electrode, said second drive circuit means being adapted to selectively reference said segment electrode to a potential having a polarity opposite to the potential of said common electrode to define a predetermined potential difference between said common electrode and said segment electrode for less than said predetermined interval of time, said second drive circuit means being further adapted immediately prior to each time that said segment electrode is selectively referenced to a potential having a polarity opposite to the potential of said common electrode to reference said segment electrode to substantially the same polarity and substantially the same potential as said common electrode to thereby permit said display cell to be discharged just prior to said predetermined potential difference being defined between said common electrode and segment electrode.

4,196,433

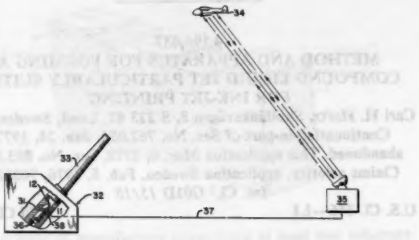
DOPPLER FREQUENCY PROXIMITY FUZE

Charles B. Brown, Kensington, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 567,036, Feb. 21, 1956, abandoned. This application Dec. 23, 1959, Ser. No. 861,724

Int. Cl.[2] F42C *13/04*

U.S. Cl. 343—6 R 1 Claim



1. An apparatus for preselecting the Doppler frequency response of a proximity fuze comprising, in combination, radar means for determining the relative velocity between a selected target and a proximity fuze and for developing a predetermined control current correlative to this information, tunable amplifier means in the proximity fuze discretely responsive to said control current and adapted to render the proximity fuze selectively responsive to the determined relative velocity between the selected target and the proximity fuse, a conductive sleeve on the proximity fuze electrically connected to said tunable amplifier, and contact means detachably abutting said sleeve and electrically connected to said radar means for applying said control current to the fuze prior to the firing thereof at the selected target.

4,196,434

SURVEILLANCE SYSTEM FOR COLLISION AVOIDANCE OF AIRCRAFTS USING RADAR BEACON

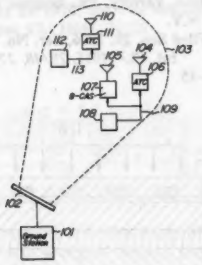
Chuhei Funatsu, Yokohama, and Toshikiyo Hirata, Samukawa, both of Japan, assignors to Toyo Tsushinki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 15, 1977, Ser. No. 833,597

Claims priority, application Japan, Sep. 20, 1976, 51-112553

Int. Cl.[2] G01S *9/56*; G08G *5/04*

U.S. Cl. 343—6.5 R 16 Claims



1. A surveillance system for avoiding collision between aircraft using radar beacons and comprising a surveillance means for other aricraft, a surveillance means for intruder aircraft, a surveillance means for threat aircraft, wherein said surveillance means for other aircraft comprises the following three listening means (a), (b) and (c);

(a) a term listen-in means to detect a term from a time of receipt by one aircraft of an interrogation signal emitted from a ground secondary surveillance radar station to a time of receipt by said one aircraft of a response signal sent from an other aircraft responding to said interrogation signal, and to judge whether said detected term is within a predetermined term or not,

(b) a level listen-in means to judge whether the receiving level of said response signal from said other aircraft received by said one aircraft exceeds a predetermined level or not,

(c) an active listening means comprising a secondary surveillance radar in said one aircraft for irradiating interrogation signals of comparatively low power at predetermined time interval for detecting the presence of a response signal from aircraft; said surveillance means for intruder aircraft comprising a means effecting at least two judgments, a first of which is to intermittently irradiate interrogation signals having at least two interrogation groups having a predetermined interval at a power higher than that of said active listening means, to receive a response signal from responding aircraft and to judge whether the time elapsed between sending said interrogation signal to receipt of the response signal is within a predetermined time limit or not, the second judgment being whether a rate of shortening of said time is greater than a predetermined rate or not;

said surveillance means for threat aircraft comprising a means for effecting at least three judgments, a first of which entails intermittently irradiating interrogation signals having at least three interrogation groups having a predetermined interval at a power higher than that of said active listening means, said predetermined interval being shorter than that of said surveillance means for intruder aircraft, response signals from aircraft responding to the interrogation signals being judged as to whether a time from the interrogation to the reception of the response is within a predetermined time or not, a second judgment being whether the shortening rate of said time is longer than a predetermined rate or not, the third judgment involving calculating the estimated time before collision between one's and other aircraft and to judge whether such calculated time is shorter than a predetermined value or not; and means to judge conditions of at least one of said listening means (a), (b) and/or (c), to judge conditions of at least one of said two judgments for intruder aircraft surveillance and to judge conditions of at least one of said three judgments for threat aircraft surveillance, and based on said judgments and whether an aircraft intrusion or threat condition exists, to effect transfer from the surveillance means for other aircraft to the surveillance means for intruder aircraft and from the surveillance means for intruder aircraft to the surveillance means for threat aircraft and conversely from the surveillance means for threat aircraft to the surveillance means for intruder aircraft and from the surveillance means for intruder aircraft to the surveillance means for other aircraft.

4,196,435

RADAR PULSE PHASE CODE SYSTEM

Calvert F. Phillips, Jr., Cape St. Claire, Md., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 21, 1967, Ser. No. 662,194

Int. Cl.[2] G01S *9/233*

U.S. Cl. 343—17.2 PC 1 Claim

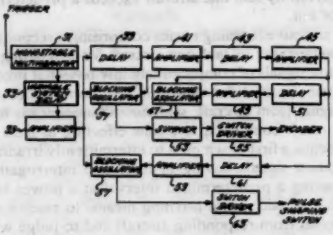
1. A radar apparatus for reducing the effective width of transmitted pulses comprising:

a. encoder means for shifting certain discrete bits of the transmitted pulse by 180° in accordance with a predetermined code;

b. and decoding means for adding all the discrete bits of the returned signal for target identification, the encoder means including:

1. a monostable multivibrator,

2. a variable delay circuit fed by the monostable multivibrator,
3. a first blocking oscillator activated by the output of the variable delay circuit,
4. a first switch driver controlled by the first blocking oscillator for pulse shaping,



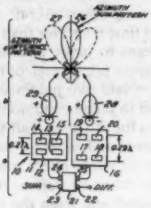
5. a second delay circuit fed by the output of the variable delay circuit,
6. a second blocking oscillator activated by the output of the variable delay circuit and deactivated by the output of the first delay circuit, and
7. a second switch driver controlled by the output of the second blocking oscillator for phase shifting.

4,196,436

DIFFERENTIAL BACKLOBE ANTENNA ARRAY

Charles W. Westerman, El Toro, Calif., assignor to Ford Motor Company, Dearborn, Mich.

Filed Nov. 14, 1978, Ser. No. 960,689
Int. Cl.[2] H01Q 3/26
U.S. Cl. 343—854 **9 Claims**



1. An antenna system comprising:
a left antenna array having a first pair of radiating means for coupling electromagnetic energy thereby acting as antenna;
a right antenna array having a second pair of radiating means for coupling electromagnetic energy thereby acting as antenna;
a four hybrid coupler in communication with said left and right antenna arrays for forming sum and difference signals from signals associated with said left and right antenna arrays so that the difference signal has an aft directed backlobe peak greater in magnitude than the magnitude of the aft directed sum signal; and
said first pair of radiating means having a spacing therebetween determined substantially by the equation, $\lambda(0.25-x)$ and said second pair of radiating means having a spacing therebetween determined substantially by the equation $\lambda(0.25+x)$, wherein λ is the wavelength of an electrical signal applied to said antenna system and x is the radiating means spacing differential in wavelengths so that one of said antenna arrays produces a backlobe with a positive phase and the other of said antenna arrays produces a backlobe with a negative phase and combining of the signals associated with each of said antenna arrays in said four port hybrid coupler can produce said aft directed difference pattern peak simultaneously with a forward directed difference pattern null and said aft directed sum pattern null simultaneously with a forward directed sum pattern peak which can substantially eliminate sensitivity to the backlobes of said antenna system while sensitivity to the forward lobe is retained.

4,196,437

METHOD AND APPARATUS FOR FORMING A COMPOUND LIQUID JET PARTICULARLY SUITED FOR INK-JET PRINTING

Carl H. Hertz, Skolländksvägen 8, S 223 67, Lund, Sweden

Continuation-in-part of Ser. No. 762,054, Jan. 24, 1977, abandoned. This application Mar. 6, 1978, Ser. No. 883,583
Claims priority, application Sweden, Feb. 5, 1976, 7601235
Int. Cl.[2] G01D 15/18
U.S. Cl. 346—1.1 **76 Claims**

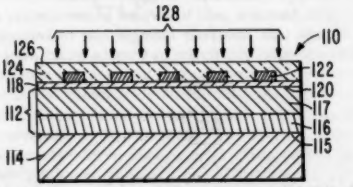
1. In an ink-jet recording method wherein a jet of fine droplets of a liquid is controllably directed onto a receptor surface, the improvement comprising forming said jet of fine droplets by ejecting under pressure a primary liquid stream from a nozzle through a thin layer of a different secondary fluid having a free stream discharge surface to form a compound liquid stream which breaks up at a drop formation point into said jet of fine droplets which is characterized as constituting a compound jet of said primary liquid and said secondary fluid.

4,196,438

ARTICLE AND DEVICE HAVING AN AMORPHOUS SILICON CONTAINING A HALOGEN AND METHOD OF FABRICATION

David E. Carlson, Yardley, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 29, 1976, Ser. No. 727,659
Int. Cl.[2] H01L 29/48, 27/14
U.S. Cl. 357—15 **30 Claims**



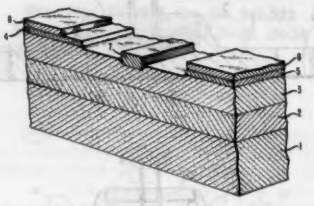
1. A semiconductor device comprising:
a layer of amorphous silicon having a semiconductor junction within said layer, said layer containing a halogen selected from the group consisting of chlorine, bromine and iodine, said halogen being present in an amount up to about 7 atomic percent.

4,196,439

SEMICONDUCTOR DEVICE DRAIN CONTACT CONFIGURATION

William C. Niehaus, Murray Hill, and Stuart H. Wemple, Chatham Township, Morris County, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jul. 3, 1978, Ser. No. 921,585
Int. Cl.[2] H01L *29/80*
U.S. Cl. 357—22 13 Claims



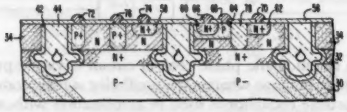
1. Article of manufacture comprising at least one substrate supported device, said device comprising (a) an active layer consisting essentially of a semiconductor material having extrinsic properties due to a net doping level, (b) a drain contact on a first surface portion of said active layer, said active layer comprising (1) a first region which is in contact with at least a portion of said drain contact and (2) a second region which, in a direction perpendicular to said active layer, extends from said first region through the remainder of said active layer, net doping level being less in said second region than in said first region, and (c) means for providing said second region with free carriers at a point beyond the edge of said drain contact CHARACTERIZED IN THAT said first region extends, in a direction parallel to said active layer, beyond said edge towards said point for a distance which is at least equal to the thickness of said active layer measured at said edge.

4,196,440

LATERAL PNP OR NPN WITH A HIGH GAIN

Narasipur G. Anantha, Hopewell Junction; Harsaran S. Bhatia; Santosh P. Gaur, both of Wappingers Falls, and Hans B. Pogge, Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 25, 1978, Ser. No. 909,338
Int. Cl.[2] H01L *29/06*
U.S. Cl. 357—35 10 Claims



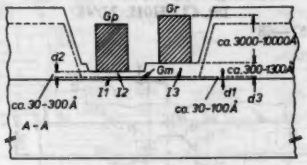
1. A lateral PNP transistor structure comprising:
a monocrystalline silicon region isolated from other such regions by dielectric isolation;
the said dielectric isolation partially extending into said silicon region below the surface of said silicon region;
a P emitter region located above said partially extending isolation in said silicon region;
P collector region and N base region within said silicon region; and
electrical contacts to said emitter base and collector regions forming said PNP lateral transistor structure.

4,196,441

SEMICONDUCTOR STORAGE CELL

Fritz G. Adam, Freiburg, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed May 5, 1978, Ser. No. 903,359
Claims priority, application Fed. Rep. of Germany, May 26, 1977, 2723738
Int. Cl.[2] H01L *27/02*
U.S. Cl. 357—41 35 Claims



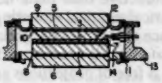
1. A semiconductor storage cell for nonvolatile electric charge storage, comprising: a ribbonlike source region and a ribbonlike drain region of one conductivity type which are formed in a plane surface of a semiconductor substrate of the other conductivity type, extending parallel to one another, and are interconnected via a channel region above which is disposed a gate insulator layer having an embedded storage medium therein for storing a charge below a gate electrode, that transversely to the source region and the drain region on the gate insulator layer with the embedded storage medium, a ribbonlike programming gate and a ribbonlike read gate are disposed above the channel region and parallel to one another, and that the storage medium below the two gates extends continuously over the entire width of both the read gate and the programming gate, thereby being common to both gates.

4,196,442

SEMICONDUCTOR DEVICE

Keiichi Kuniya; Hideo Arakawa; Kunihiro Maeda, and Keiichi Morita, all of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

Filed May 31, 1978, Ser. No. 911,078
Claims priority, application Japan, Jun. 3, 1977, 52-64720
Int. Cl.[2] H01L *23/48*
U.S. Cl. 357—67 6 Claims



1. A semiconductor device including a semiconductor substrate and a supporting electrode bonded to at least one surface of said semiconductor substrate, wherein said supporting electrode comprises a composite body having fibers embedded in substantially uniform distribution in a matrix of an electrically conductive metal, the coefficient of thermal expansion of said fibers being substantially equal to or smaller than that of said substrate, with said fibers being arrayed in an annular configuration having a plurality of annuluses, in at least a surface portion of said composite body at which said composite body

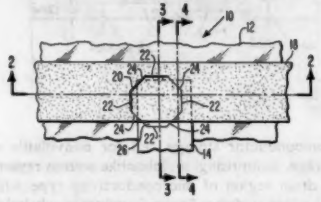
is bonded to said semiconductor substrate, said annuluses being arranged substantially in parallel with said surface portion and concentrically around a center of said surface portion.

4,196,443

BURIED CONTACT CONFIGURATION FOR CMOS/SOS INTEGRATED CIRCUITS

Andrew G. F. Dingwall, Bridgewater, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 25, 1978, Ser. No. 936,779
Int. Cl.[2] H01L *23/48*
U.S. Cl. 357—68 **8 Claims**



1. An integrated circuit structure of the type comprising at least one semiconductor device formed in a layer of semiconductor material which is on a substrate of insulating material, the semiconductor device including a region to which electrical contact must be made, the contact being made directly by a doped, conductive semiconductor interconnect, wherein the improvement comprises:

an opening formed in an insulating layer overlying said layer of semiconductor material through which said conductive semiconductor interconnect contacts said underlying semiconductor layer, said opening having a shape selected to have at least one edge, when viewed from the top, which is not orthogonal to or parallel to at least one edge, when viewed from the top, of said conductive semiconductor interconnect which is at least partially crossed by said edge of said opening.

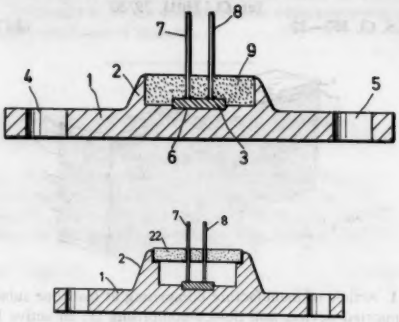
4,196,444

ENCAPSULATED POWER SEMICONDUCTOR DEVICE WITH SINGLE PIECE HEAT SINK MOUNTING PLATE

Karl Butner, Freising; Josef Hehnen, Neufahrn, and Reiner Rudiger, Freising, all of Fed. Rep. of Germany, assignors to Texas Instruments Deutschland GmbH, Freising, Fed. Rep. of Germany

Continuation of Ser. No. 857,953, Dec. 5, 1977, abandoned. This application Mar. 26, 1979, Ser. No. 23,558
Claims priority, application Fed. Rep. of Germany, Dec. 3, 1976, 2654960
Int. Cl.[2] H01L *23/02, 23/48, 29/44*
U.S. Cl. 357—81 **7 Claims**

1. A power semiconductor device comprising an electrically and thermally conductive base plate defining a combination heat sink and electrical terminal mounting plate having a recess in one major surface thereof accommodating a semiconductor body, said base plate having a major surface opposite said one major surface that is free of projections and provides a substantially flat mounting area wholly circumscribing said recess and of substantially greater area than that of said recess; said semiconductor body having a surface bonded to the floor of said recess in electrically and thermally conductive relation with said base plate such that said base plate provides direct electrical terminal contact means for said surface of the semiconductor body; said base plate including an integral collar surrounding and laterally spaced from said recess and projecting upwardly significantly above said semiconductor body; a plurality of straight connecting conductor wires having end portions secured to contact zones of said semiconductor body on a surface of said body opposite from said surface bonded to the floor of said recess; all of said conductors upstanding vertically from said contact zone surface within the perimeter of said collar and projecting beyond said collar; and cover means comprising a single mass of protective insulating material



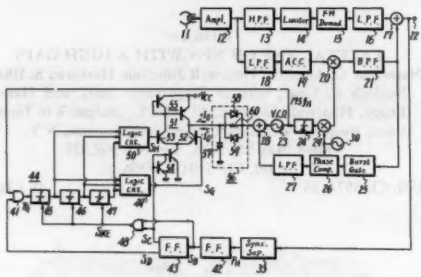
surrounding and covering said semiconductor body within and filling the peripheral confines of and retained by said collar and through which said conductors project; said mass of insulating material securing the conductors in place in said vertical position within the collar.

4,196,445

TIME-BASE ERROR CORRECTION

Takashi Okada, Kanagawa; Yasunobu Kuniyoshi, and Kiyonori Tominaga, both of Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 16, 1978, Ser. No. 951,881
Claims priority, application Japan, Oct. 17, 1977, 52-12498
Int. Cl.[2] H04N *5/78, 5/79*
U.S. Cl. 358—8 **14 Claims**



1. In an automatic phase control circuit having a predetermined lock-in range wherein the oscillating signal produced by an adjustable oscillator is used in combination with an input signal to derive a signal whose phase is compared to a reference signal, the phase difference between the derived signal and the reference signal being used to adjust the oscillator so as to minimize said phase difference and lock the phase of said derived signal to that of said reference signal, a method of adjusting said oscillator in the event that the phase relation between said oscillating signal and said input signal is outside said lock-in range comprising the steps of establishing recurrent intervals which vary with time base errors in said input signal; counting the number of cycles of said oscillating signal in each interval; sensing whether said count is within a predetermined range of a predetermined count; and adjusting the

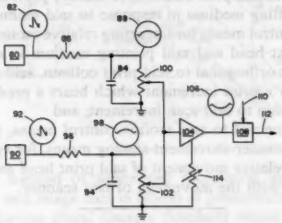
oscillating frequency of said oscillator as a function of said count and in a direction to return said count to within said predetermined range.

4,196,446

TELEVISION PICTURE TUBE HAVING ENHANCED RESOLUTION AND COLOR PURITY

William A. Rowe, Palatine, and James W. Schwartz, Deerfield, both of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Filed Nov. 24, 1978, Ser. No. 963,533
Int. Cl.[2] H04N *9/18*; H01J *29/52, 29/56*
U.S. Cl. 358—74 **3 Claims**



1. In a television receiver system having a cathode ray picture tube including an imaging faceplate having deposits of multicolor phosphors thereon, said tube further including a three-beam electron gun and a color selection aperture mask having apertures in registration with said targets, said receiver system having means for developing a luminance signal, and horizontal and vertical beam scansion circuit means, and wherein the impingement of said beams on said mask while scanning causes localized peripheral heating and doming of said mask with consequent loss of said registration resulting in color impurities in the image, means for reducing said doming and its effects comprising:

means for deriving a beam-current-control signal from said scansion circuit means in which the amplitude of said signal varies as a function of the distance of said beams from the center of the faceplate; and,

means receiving said beam-current-control signal for modulating said luminance signal with said beam-current-control signal, said beam-current-control signal having such characteristics that said modulation causes a predetermined gradational reduction in beam current as a function of the distance of the beam from the center of said faceplate effective to reduce mask heating and doming and enhance color purity.

4,196,447

FACSIMILE TO VIDEO CONVERTER

James Dalke, Bellevue, Wash., assignor to Arvin Industries, Inc., Columbus, Ind.

Filed Apr. 17, 1978, Ser. No. 897,281
Int. Cl.[2] H04N *9/02, 7/14, 5/02, 1/00*
U.S. Cl. 358—82 **8 Claims**

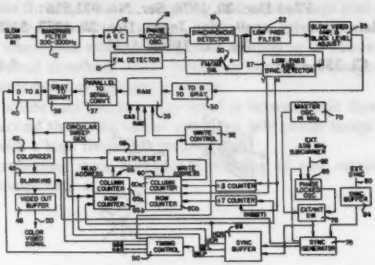
8. A method for converting facsimile picture information transmittable over telephone circuits into broadcast compatible composite video signals, comprising the steps of

demodulating and detecting the picture and line sync components of the facsimile signal and converting the picture components into graded digital words and storing such into a RAM,

generating composite broadcast compatible video sync signals including horizontal and color subcarrier signals and timing signal synchronized therewith,

dividing both the video horizontal sync and the facsimile line sync components and using such divisions of the video horizontal sync and the facsimile line sync components to write address the RAM and store the digital words in groups corresponding to lines of picture information at an aspect ratio compatible with broadcast video signals,

using the video horizontal sync and timing signal synchronized therewith to read address the RAM and to read a



group of digital words successively within the line interval of a broadcast video signal into a D to A converter as the write addressing proceeds, and

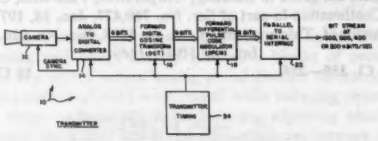
adding the video sync signals to the output of the D to A converter and thus providing a broadcast compatible video output of the input facsimile picture.

4,196,448

TV BANDWIDTH REDUCTION SYSTEM USING A HYBRID DISCRETE COSINE DPCM

Harper J. Whitehouse, San Diego, Calif.; Robert W. Means, Lausanne, Switzerland; Edwin H. Wrench, Jr.; Jeffrey M. Speiser, both of San Diego, Calif., and Allan G. Weber, Los Angeles, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 15, 1978, Ser. No. 905,902
Int. Cl.[2] H04N *7/12*
U.S. Cl. 358—135 **12 Claims**



1. A digital image-compression system, comprising a transmitter and a receiver, wherein the image consists of a planar array of data points having various brightness levels, the transmitter comprising:

means for converting input analog data into digital data;

means, whose input is connected to the output of the analog-to-digital (A/D) converting means, for taking the cosine transform of the incoming digital data, to transform the data representing the various brightness levels into the frequency domain; and

means, whose input is connected to the output of the cosine transform means, for differentially pulse code modulating (DPCM) the input data, thereby removing line-to-line redundancy, the output data being in parallel form; and

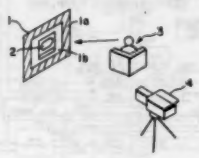
means, connected to each of the three means, for controlling the timing of the three means.

4,196,449

DIGITAL VIDEO EFFECTS SYSTEM EMPLOYING A CHROMA-KEY TRACKING TECHNIQUE

Tomoo Tama; Masao Inaba, and Kazuo Kashigi, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Dec. 20, 1978, Ser. No. 971,516
Claims priority, application Japan, Dec. 28, 1977, 52-159009
Int. Cl.[2] H04N 5/22
U.S. Cl. 358—183 5 Claims



1. A tracking system for producing special effects on a television picture, the special effects including inserting a second picture, relating to a second video signal, into a key frame positioned on a first picture, relating to a first video signal, said system comprising:

means for generating said first video signal, said first video signal representing an image which includes said key frame,

means installed in said key frame and responsive to said second video signal for displaying said second picture;

means responsive to said first video signal for producing a key signal, said key signal including first and second signal portions corresponding to said key frame and said displaying means, respectively;

means responsive to said key signal for converting said second signal portion into a signal component which is the same as that of said first signal portion and for producing a compensated key-signal; and

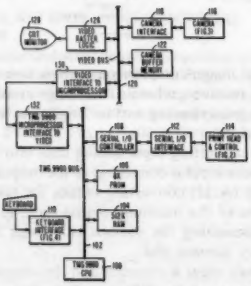
means for selectively gating said first video signal and said second video signal in response to said compensated key signal whereby said second picture is inserted into said key frame in said first picture.

4,196,450

SELECTIVE COPYING APPARATUS

Armin Miller, and Maxwell G. Maginness, both of Palo Alto, Calif., assignors to Datacopy Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 760,427, Jan. 18, 1977, abandoned. This application Jul. 14, 1978, Ser. No. 924,645
Int. Cl.[2] H04N 1/40
U.S. Cl. 358—256 18 Claims



1. A selective image copier comprising:

a scanner, manually operable by a user thereof, including manually-activated means for serially scanning a portion of said image, whereby electrical signals are produced corresponding in intensity to the portion of the image scanned;

means responsive to said scanner for digitizing said electrical signals to thereby produce first-digital signals;

means for sensing movement of said scanner, said movement being by a scan increment which places said scanning means at a different location on said image;

a printing medium;

a print head comprising a plurality of print elements arranged in a print column;

means responsive to said first-digital signals from said digitizing means for applying second-digital signals corresponding to said first-digital signals in parallel simultaneously to said print elements to thereby print an image on said printing medium in response to said second signals;

motion-control means for imparting relative motion between said print head and said printing medium in a direction which is orthogonal to said print column, said movement being by a print increment which bears a predetermined relationship to said scan increment; and

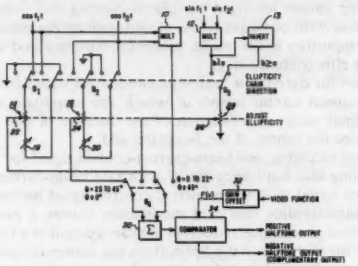
means connected to said motion-control means, responsive to said scanner-movement-sensing means, for synchronizing the relative movement of said print head and printing medium with the movement of said scanner.

4,196,451

ELECTRONIC HALFTONE GENERATOR

Ronald J. Pellar, Sierra Madre, Calif., assignor to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 688,669, May 21, 1976, Pat. No. 4,149,183.. This application Jul. 28, 1978, Ser. No. 928,652
Int. Cl.[2] H04N 1/40
U.S. Cl. 358—283 8 Claims



1. Apparatus for converting an electrical analog input signal representing an image into a corresponding output signal in the form of a dot pattern corresponding to said image comprising:

means for generating a time-varying electrical function which is a function of first and second signals of first and second frequencies, respectively, said first and second frequencies being separately adjustable,

means for accepting said analog signal as a series of successive scan lines during the generation of each dot which will form said dot pattern, said analog signal being produced by scanning said image in first and second directions,

means coupled to said generating means and said accepting means for comparing said successive scans with said function and generating a comparison signal when said function differs from said successive scans,

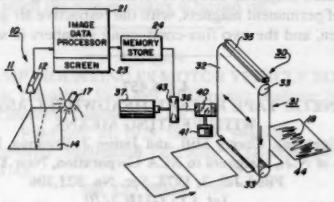
means responsive to said difference signal for providing an output signal, and

means for generating said dot pattern by scanning said output signal in directions corresponding to said first and second directions, the direction of alignment of the dots relative to said first direction of scan being determined by the selection of said first and second frequencies.

4,196,452
TONE ERROR CONTROL FOR IMAGE CONTOUR REMOVAL

W. Thomas Warren, Webster, and Peter A. Crean, Pennfield, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 1, 1978, Ser. No. 965,667
Int. Cl.[2] H04N 1/40
U.S. Cl. 358—283 7 Claims



1. The method of processing multi-level image data by screening said image data in blocks of predetermined size with a screen having plural discrete threshold values to produce a binary level output suitable for reproduction while reducing objectionable image contouring effects between adjoining blocks of screened image data, the steps which comprise:

(a) screening a first block of said image data to provide binary level image output data;

(b) determining the average gray level of said first block of image data before screening;

(c) determining the average gray level of said first block of image data as if said first block of image data were screened;

(d) comparing the average gray levels of steps b and c to identify any error associated with screening of said first block of image data;

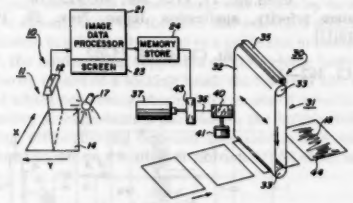
(e) compensating for said error by algebraically summing said error with said screen discrete threshold values to provide a modified screen; and

(f) screening the second succeeding block of image data using said modified screen.

4,196,453
IMAGE SCREENING SYSTEM

W. Thomas Warren, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 1, 1978, Ser. No. 965,668
Int. Cl.[2] H04N 1/40
U.S. Cl. 358—283 11 Claims



1. The method of processing an original which may be comprised of shadow, midtone or highlight image areas, or some combination thereof, to enhance printing of copies of said original by a copier while offsetting any limitations of said copier to print relatively small and relatively large dots, the steps which comprise:

(a) obtaining the average gray level of a preset area of said original;

(b) comparing the said average gray value with predetermined first and second threshold values;

(c) where said average gray level is equal to or below said first threshold value, screening said preset image area with a low frequency screen;

(d) where said average gray level is equal to or above said second threshold value, screening said preset image area with said low frequency screen;

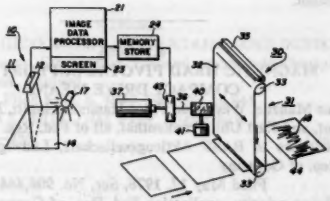
(e) where said average gray level is between said first and second threshold values screening said preset image area with a high frequency screen; and

(f) repeating steps a-d until processing of said original is completed.

4,196,454
TONE ERROR CONTROL FOR RELATIVELY LARGE IMAGE AREAS

W. Thomas Warren, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 4, 1978, Ser. No. 965,824
Int. Cl.[2] H04N 1/40
U.S. Cl. 358—283 5 Claims



1. The method of processing multi-level image data by screening said image data in successive blocks of predetermined size with a screen having plural discrete threshold values to produce a binary level output while reducing objectionable image contouring effects between adjoining blocks of screened image data and shading discrepancies between original and halftone copy, the steps which comprise:

(a) establishing an error of zero whereby said screen threshold values are unchanged and said screen unmodified;

(b) screening a first block of image data with said unmodified screen to provide a first block of binary level image output data;

(c) determining the average gray level of said first block of said image data before screening;

(d) determining the average gray level of said first block of image data as if said block of image data were screened;

(e) comparing the average gray levels of steps c and d to identify any error;

(f) compensating for said error by algebraically summing said error with said screen discrete threshold values to provide a modified screen; and

(g) screening the second succeeding block of image data using said modified screen.

4,196,455

COPYING MACHINE WITH CONSTANT LENGTH SCANNING BEAM

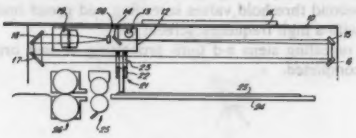
Edric R. Brooke, Milton Keynes, England, assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 4, 1978, Ser. No. 948,360

Claims priority, application United Kingdom, Oct. 5, 1977, 41306/77; Nov. 29, 1977, 49523/77

Int. Cl.² H04N *1/10, 1/04*

U.S. Cl. 358—296 **5 Claims**



1. In a copying machine for reproduction of a stationary original by progressively scanning a surface of the original and directing a scanning beam on to a photosensitive device which either generates an image of the original or an electric signal representing that image and having a scanning carriage movable parallel to said surface the improvement comprising photosensitive device and light source mounting means on said carriage, and first reflecting surface means on said carriage, first reflecting means mounted on said carriage arranged to direct said beam away from said photosensitive device and parallel to said surface, second reflecting means mounted on said machine arranged to return said beam parallel to said surface to a remote position beyond said photosensitive device, and third reflecting means mounted on said machine at said remote position to direct said beam along a path parallel to said surface towards said photosensitive device, such that during scanning the overall length of the scanning beam remains constant.

4,196,456

MAGNETIC HEAD PIVOTAL SUPPORT WITH COMPACT DRIVE MEANS

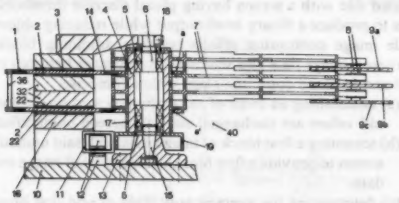
Klaus Manzke, Westheim; Peter Hammerschmitt, Bruehl-Rohrhof, and Karl Uhl, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed May 17, 1978, Ser. No. 906,444

Claims priority, application Fed. Rep. of Germany, May 23, 1977, 2723140

Int. Cl.² G11B *21/02*

U.S. Cl. 360—106 **17 Claims**



1. A device for positioning objects of low mass, particularly magnetic heads over preselected tracks on at least one magnetic disc which can be coupled to a drive in a memory processing unit in which there are provided at least one support for at least one magnetic head, which support is pivotable about an axis parallel to the axis of rotation of the magnetic disc, and at least one coil support for a drive means for pivoting the head support, and in which the said drive means includes at least one flat coil with two winding sections which projects into the working air gaps of magnet assembly means, wherein the magnet assembly means includes at least two pairs of flat permanent magnets, the two working air gaps of which are arranged next to each other in the same plane and have the two winding sections of said coil extending therethrough, respectively, and the poles of which are so arranged that poles of unlike polarity are opposite as well as adjacent to each other, and wherein the two pairs of co-planar adjacent poles of opposite polarity are magnetically connected together via two common flat flux-conducting members, respectively, such that a common magnetic circuit is formed extending over the two pairs of permanent magnets, with the respective air gaps therebetween, and the two flux-conducting members in series.

4,196,457

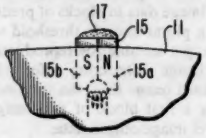
MAGNETIC TAPE ROTARY HEADWHEEL ASSEMBLY WITH VENTING MEANS

Irwin Spetgang, Cherry Hill, and James J. Brennan, Magnolia, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Jul. 3, 1978, Ser. No. 921,206

Int. Cl.² G11B *5/10*

U.S. Cl. 360—129 **5 Claims**



1. A magnetic head assembly for relatively high speed recording on magnetic tape comprising:

a headwheel having distributed thereon spaced magnetic heads,

means for guiding the tape in close contact with the heads,

drive means coupled to said headwheel for rotating said headwheel at high speeds,

cover means mounted over the headwheel and the rotating portions of the assembly for protecting personnel from fly away parts, said heads when rotated at relatively high speeds having debris formed thereon, and

means including apertures through said cover in the region near the headwheel and spaced from the tape guide for venting the headwheel through said cover to thereby prevent debris from forming on said heads.

4,196,458

PHOTOGRAPHIC FLASHLIGHT APPARATUS

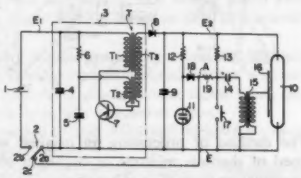
Isao Kondo, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jul. 17, 1978, Ser. No. 925,114

Claims priority, application Japan, Nov. 29, 1977, 52-160818[U]

Int. Cl.² G03B *15/02*

U.S. Cl. 362—10 **4 Claims**



1. In a photographic flashlight apparatus including a flash discharge tube, a primary capacitor connected across the flash

discharge tube, a charging complete indicator circuit includng a lamp for indicating the completion of charging of the primary capacitor, and a trigger circuit including a trigger capacitor associated with the discharge tube; the improvement which comprises a power switch in the form of a single pole, double throw switch which connects a power source with or disconnects it from ground, and means connecting an off contact of the power switch with a junction between the charging complete indicator circuit and the trigger circuit, said means short-circuiting the lamp in the indicator circuit and the trigger capacitor when the power switch is turned off.

4,196,459

HEADLAMP MOUNTING IN MOTOR VEHICLE BODIES

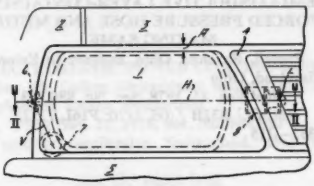
Heinz Dick, Odenthal, Fed. Rep. of Germany, assignor to Ford Motor Company, Dearborn, Mich.

Filed Sep. 21, 1978, Ser. No. 944,528

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1977, 2743745

Int. Cl.² B60Q *1/06*

U.S. Cl. 362—66 **13 Claims**



1. A headlamp mounting for motor vehicle bodies, the headlamp being supported for swivelling movement about a fixed pivot point and for adjustment in the forward and rearward directions with the aid of two adjusting devices, and for adjustment about a substantially horizontal axis and about a substantially vertical axis, wherein the improvement comprises:

(a) the fixed pivot point consisting of a bearing part disposed on the outer side of the headlamp in relation to the vehicle, the bearing part being mounted for swivelling movement in a holder part disposed on a neighboring vehicle component;

(b) the adjusting device providing for adjustment about the substantially horizontal axis consisting of a bearing part disposed at the bottom on the outer side of the headlamp in relation to the vehicle and which is connected by a double-headed member to a hydraulically, electrically, mechanically or manually operated lighting range adjusting device which is mounted on the vertical body;

(c) the adjusting device providing for adjustment about the substantially vertical axis consisting of a U-shaped spring bow which is fastened by one arm to the inner side of the headlamp in relation to the vehicle and which by its other arm is adjustable in the forward and rearward directions in relation to a holder received in a guide slot in the spring bow, the holder being supported on the vehicle body in a recess by means of a locking head, the forward and rearward adjustment being obtained by means of a horizontal adjusting screw which is movable in the holder, the adjusting screw having one end rotatable in and axially fastened to act on a bent-over portion of the other arm.

4,196,460

MAJOR SURGICAL LIGHT

Jay G. Schreckendgust, Victor, N.Y., assignor to Sybron Corporation, Rochester, N.Y.

Filed Jul. 14, 1978, Ser. No. 924,629

Int. Cl.² F21V *9/00*

U.S. Cl. 362—231 **11 Claims**

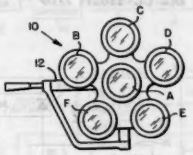
1. A surgical light for illuminating a surgical site with a pattern that is adjustable in both size and color, said light comprising:

(a) a first light source producing a light pattern of a first given diameter and color;

(b) a second light source producing a light pattern of a second given diameter and color;

(c) a third light source producing a light pattern having said second given diameter and of a third given color;

(d) a support for said light sources, each of said light sources being fixed relative to said support and to each other and being arranged on said support so that the light patterns from said three light sources are concentric and superimposed at the surgical site to produce a single light pattern;



(e) color adjusting means increasing and decreasing the intensity of said second light source while simultaneously decreasing and increasing respectively the intensity of said third light source for changing the color of said single light pattern; and

(f) size adjusting means increasing and decreasing the intensity of said first light source while simultaneously decreasing or increasing respectively the intensity of said second and third light sources for changing the diameter of said single light pattern between the limits of said first and second given diameters.

4,196,461

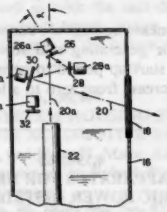
PATTERN GENERATING ENTERTAINMENT DEVICE

Michael L. Geary, Birchington, England, assignor to Chartglen, Ltd., London, England

Filed Mar. 6, 1979, Ser. No. 18,066

Int. Cl.² F21K *1/00*; F21V *7/00*; G02B *27/17*

U.S. Cl. 362—259 **5 Claims**



1. A pattern generating entertainment device for projected images comprising:

a collimmated light source producing a beam;

a plurality of mirrors positioned to intercept and reflect said beam in seriatim;

each said mirror being rotatable about a central axis in a plane generally normal to said beam;

each said mirror having its reflecting face inclined at an angle in the range of 1° to 5° to said normal plane;

said mirrors being positioned and sized to intercept and reflect both said beam and patterns generated upon rotation of one or more of said mirrors;

motor drive and precise speed control means for each said mirror, whereby any mirror can be rotated at a precisely controllable speed;

one said drive means including rotational-direction-reversing means whereby any generated pattern may be inverted; and

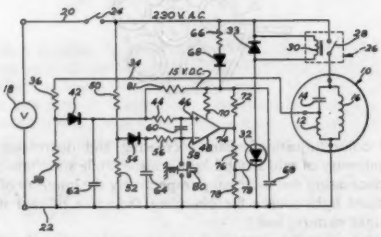
beam-clipping means capable of intercepting said beam at a controllable frequency prior to reflection by any of said mirrors, whereby line-chasing patterns may be generated.

4,196,462

PROTECTIVE CONTROL CIRCUIT FOR INDUCTION MOTORS

Walter J. Pohl, Anchorage, Ky., assignor to General Electric Company, Louisville, Ky.

Filed May 30, 1978, Ser. No. 910,303
Int. Cl.[2] H02H 7/09
U.S. Cl. 361—33 **8 Claims**



1. A protective control circuit for use with a single phase induction motor of the type having a start winding comprising relay means for controlling the application of an electrical power source to said motor,

comparing means responsively connected to said start winding and source for generating a first output signal when the voltage across said start winding is less than a preselected minimum value, and for generating a second output signal when said start winding voltage is greater than said minimum value,

means responsively connected to said comparing means for operating said relay means to disconnect said source from said motor in response to said first signal and to connect said source to said motor in response to said second signal, and

motor starting means operatively connected to said comparing means for generating said second signal during an initial motor start up period to permit said start winding voltage to increase from zero to a level above said minimum value.

4,196,463

METHOD AND APPARATUS FOR DETECTING FAULTS IN AN ELECTRIC POWER DISTRIBUTION SYSTEM

Arthur F. Dickerson, Woodland Hills, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Jun. 5, 1978, Ser. No. 912,663
Int. Cl.[2] H02H 3/26
U.S. Cl. 361—113 **18 Claims**

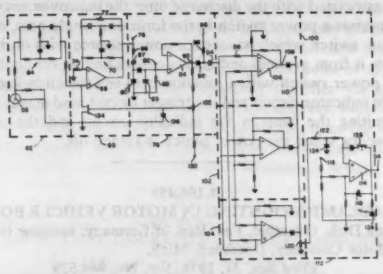
1. An apparatus for detecting faults in a multiphase alternating current power system comprising:

means connected to each phase for sensing the current in each phase conductor of the alternating current electric power system and for providing a phase signal related to phase current;

means for processing each phase signal by stopping the fundamental frequency alternating current wave;

means for processing each phase signal by passing substantially only the third harmonic wave; and

means for comparing a signal representing the third harmonic wave of each phase with a reference signal representing the third harmonic wave of another phase so that when the signal representing the third harmonic wave of



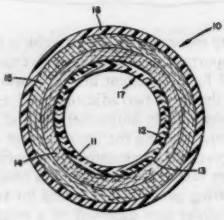
any phase compares unfavorably with the reference signal, a fault signal is emitted.

4,196,464

SEMI-CONDUCTIVE LAYER-CONTAINING REINFORCED PRESSURE HOSE AND METHOD OF MAKING SAME

David D. Russell, Ravenna, Ohio, assignor to Eaton Corporation, Cleveland, Ohio

Filed Feb. 23, 1978, Ser. No. 880,718
Int. Cl.[2] B32B 1/08, 1/10; F16L 11/12
U.S. Cl. 361—215 **30 Claims**



1. A flexible hose for conveying and spraying a fluid which comprises

a core tube through which the fluid flows under pressure, said core tube having a laminated wall with a first extruded lamina of a synthetic polymer adjacent to the fluid which resists chemical attack by the fluid and which conducts static electricity radially outwardly from the fluid and a second lamina disposed radially outwardly about the first lamina, said second lamina being a semi-conductive polymer which is in electrical contact with the first lamina, said semi-conductive polymer being a cross-linked polymer, said laminae being co-extensive throughout the length of the hose,

at least one layer of fibrous material disposed about the core tube and reinforcing it against bursting under pressure from the fluid,

a substantially non-electrical conducting synthetic polymer sheath about the said fibrous material, and

a spray nozzle on one end of the hose in electrical conducting contact with said semi-conductive lamina and electrically connected to ground.

19. In a method of making a flexible reinforced hose for conveying fluids under pressure comprising a composite core tube, one or more layers of fibrous reinforcing material disposed about the core tube and a substantially electrically non-conductive polymeric protective sheath disposed about the reinforcement material, said core tube having a laminated wall with a first extruded lamina of a synthetic polymer adjacent to the fluid which resists chemical attack by the fluid and which

conducts static electricity radially outwardly from the fluid and a second lamina disposed radially outwardly about the first lamina, said second lamina being a semi-conductive polymer which is in electrical contact with the first lamina, said semi-conductive polymer being a cross-linked polymer, said laminae being co-extensive throughout the length of the hose, the method including the steps of:

(a) Extruding an inner layer of a suitable flexible synthetic polymeric material into an elongate tubular shaped form;

(b) Forming an outer tubular shaped layer of cross-linkable semi-conductive synthetic polymeric material coextensively about and in intimate contact with the inner layer;

(c) Exposing the outer semi-conductive layer to an amount of radiation sufficient to cross-link the material;

(d) Disposing one or more layers of fibrous reinforcement about the outer semi-conductive layer; and

(e) Forming a protective sheath about the fibrous reinforcement material.

4,196,465

ELECTROSTATIC POWER COATING GUN

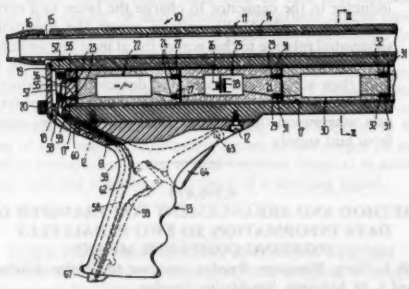
Karl Buschor, St. Gallen, Switzerland, assignor to Gema AG Apparatebau, St. Gallen, Switzerland

Filed Nov. 27, 1978, Ser. No. 964,083

Claims priority, application Switzerland, Dec. 8, 1977, 15044/77

Int. Cl.² B05B 5/02

U.S. Cl. 361—228 **5 Claims**



1. An electrostatic powder coating gun, comprising:

a gun member having a gun barrel containing a muzzle;

said gun member being provided with a chamber extending essentially parallel to the gun barrel;

a high-voltage generator arranged in said chamber;

said high-voltage generator containing an oscillator, a transformer and a voltage multiplier cascade;

charging electrodes arranged at the region of the muzzle of the gun barrel;

said voltage multiplier cascade having outlet means connected with said charging electrodes;

each said oscillator and said transformer being structured by a respective module;

said voltage multiplier cascade being structured by a number of modules;

said modules having essentially the same cross-sectional configuration;

plug connection means for electrically interconnecting said modules with one another; and

said modules being stacked in a column-like fashion within said chamber.

4,196,466

SPEED RESPONSIVE SYSTEMS

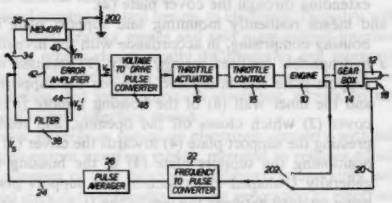
John Noddings, Ryton-on-Dunsmore, and Roland K. Borton, Rugby, both of England, assignors to Associated Engineering Limited, England

Filed Mar. 7, 1977, Ser. No. 774,865

Claims priority, application United Kingdom, Mar. 13, 1976, 10134/76

Int. Cl.² G05D 13/62

U.S. Cl. 361—239 **15 Claims**



1. A speed control system, comprising

means arranged to produce a first electrical signal having a mean level related to the speed to be controlled and an alternating component whose amplitude is related to the said speed,

means connected to compare the first electrical signal with a second electrical signal having a mean level representative of a desired value or limit for the speed and substantially free of any alternating component whereby to produce an error signal having a mean level related to a difference between the actual speed and the desired value or limit thereof and an alternating component having an amplitude related to the actual speed,

speed correcting means responsive to the instantaneous amplitude of the error signal to produce a control signal dependent thereon for adjusting the actual speed accordingly whereby to reduce the said difference towards zero, and

relationship-varying means arranged to vary the relationship between the amplitude of the alternating component of the error signal and the actual speed in a predetermined manner with respect to the actual speed whereby the instantaneous amplitude of the error signal varies with the actual speed as well as with the said difference and the value of the control signal varies correspondingly whereby to vary the gain of the system with actual speed.

4,196,467

ELECTRONIC SYSTEM HOUSING STRUCTURE, PARTICULARLY FOR AUTOMOTIVE ENVIRONMENTS

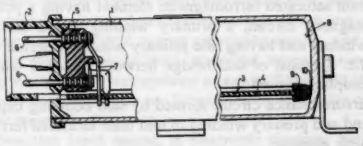
Gert Jakob, Stuttgart, and Hans-H. Maue, Asperg, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 30, 1978, Ser. No. 873,375

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1977, 7709621

Int. Cl.² H05K 5/00

U.S. Cl. 361—399 **9 Claims**



1. Electronic system housing structure, particularly for use in automotive environments having

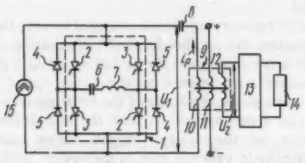
a cup-shaped housing (1) having an access opening therein;
a cover (2) closing off said opening;
a support plate (4) to support electrical circuit elements thereon located in the housing and extending transversely thereof from an inner wall of the housing (8) towards the opening;
terminal block means (5) including contact prongs (6) secured thereto, the contact prongs each having an inner end electrically connected to at least some of the circuit elements on the support plate and having an outer end extending through the cover plate (2);
and means resiliently mounting said support plate in the housing comprising, in accordance with the invention,
a hydrophobic resilient springy body (9) retained on the support plate and interposed between the support plate and the inner wall (8) of the housing remote from said cover (2) which closes off the opening, and resiliently pressing the support plate (4) towards the cover (2) while positioning the support plate (4) in the housing (1) of generally U-shaped cross section, the support plate (4) being retained between the legs of the U, and the back, or bend (10) of the U-shaped body resiliently engaging the inner wall (8) of the housing.

4,196,468

SERIES-TYPE INDEPENDENT INVERTER

Semen V. Shapiro; Leonid I. Gutin; Rinat N. Kiyamov; Viktor A. Okhotnikov; Ljubov E. Roginskaya; Vladimir G. Kazantsev, and Vladimir E. Novichkov, all of Ufa, U.S.S.R., assignors to Ufimsky Aviatsionny Institut, U.S.S.R.

Filed Dec. 19, 1978, Ser. No. 970,991
Int. Cl.[2] H02M *7/00*
U.S. Cl. 363—75 **2 Claims**



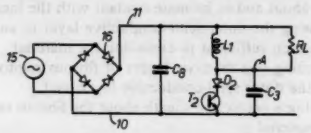
1. A series-type independent inverter, comprising:
four silicon controlled rectifiers connected to constitute a bridge network;
an a.c. diagonal and a d.c. diagonal of said bridge network;
a circuit comprised of series-connected LC-elements and inserted in said a.c. diagonal of said bridge network;
a coupling capacitor inserted in said d.c. diagonal of said bridge network;
at least one uncontrolled semiconductor rectifier electrically coupled to said bridge network and adapted to limit the voltage across said silicon controlled rectifiers;
a main saturated ferromagnetic element having a polarized magnetic circuit, a primary winding and a secondary winding and having said primary winding inserted in said d.c. diagonal of said bridge network in series with said coupling capacitor;
a ferroresonance circuit formed by said coupling capacitor and said primary winding of said main saturated ferromagnetic element;
a filter tuned to a frequency that is a multiple of the input frequency of said main saturated ferromagnetic element and connected to said secondary winding of said element.

4,196,469

DC-AC CONVERTER INCLUDING SYNCHRONIZED SWITCHING

David Gurwicz, Gateshead, England, assignor to Chloride Group Limited, London, England

Filed Jun. 22, 1978, Ser. No. 918,023
Claims priority, application United Kingdom, Jun. 24, 1977, 26680/77
Int. Cl.[2] H02M *7/537*
U.S. Cl. 363—131 **14 Claims**



1. A DC-AC converter comprising:
a direct current (D.C.) input supply having terminals providing a D.C. supply voltage;
a load circuit including a transformer;
an oscillatory circuit including at least one capacitor and an inductor connected to a primary winding of the load transformer;
a switching circuit including at least one solid state switching device coupled to said oscillatory circuit in series circuit with said inductor across said D.C. terminal;
means for synchronizing the operation of the switching circuit to the oscillation of the oscillatory circuit, said synchronizing means rendering said switching circuit non-conductive to allow the oscillatory circuit to oscillate freely for part of a cycle to transfer energy from the inductor to the capacitor to charge the latter to a certain condition in which the voltage across the inductor is substantial relative to that across the at least one switching device, which then has negligible voltage thereacross, and only then actuate said switching device to a conductive state to connect the inductor across the D.C. input terminals whereupon the inductor receives and stores energy from said supply.

4,196,470

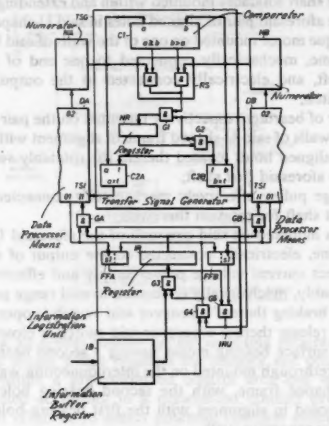
METHOD AND ARRANGEMENT FOR TRANSFER OF DATA INFORMATION TO TWO PARALLELLY WORKING COMPUTER MEANS

Erik L. Berg, Rönninge, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Dec. 5, 1977, Ser. No. 857,254
Claims priority, application Sweden, Dec. 17, 1976, 7614222
Int. Cl.[2] G06F *15/16*
U.S. Cl. 364—200 **7 Claims**

5. In a system which includes two parallelly operating data processor means, said data processing means including means for executing accordant instruction sequences in corresponding time intervals which may be mutually time displaced wherein each of the instruction sequences includes one input transfer instruction which can be activated in response to an interrupt signal, apparatus for transferring units of data information to the data processor means in response to an external demand for a data transfer to the data processor means from an external source, the demand occurring asynchronously with respect to the execution of the instruction sequences, said apparatus comprising: first and second counting means for counting the number of time intervals passed through by one and the other of the data processor means, respectively; an information registration means, connected to both data processing means, for registering one of the units of data information prior to transfer to said data processor means; a marking signal generating means for generating a marking signal in response to the receipt of an external demand for a data trans-

fer to the data processor means; a number registration means for registering transfer values and having an input and an output; a reversing switch means having inputs connected to each of said counting means and an output, and including means for disconnecting from said output the input thereof connected to the counting means with the lower count; first and second comparator means, each of said comparator means having first and second inputs and an output for emitting an interrupt signal whenever the numbers received at said first and second inputs are equal, the output of said first comparator means being connected to one of the data processor means and



a first input thereof being connected to said first counting means, the output of said second comparator means being connected to the other of the data processor means and a first input thereof being connected to said second counting means, and the second input of both of said comparator means being connected to a common terminal; and control means responsive to said marking signal generating means for alternatively connecting the output of said reversing switch means to the input of said number registration means or the output of said number registration means to said common terminal in accordance with the absence or presence of a marking signal.

4,196,471

COKE OVEN MACHINERY SPOTTING SYSTEM

Lawrence M. McClure, Vandergrift, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 800,740, May 26, 1977, abandoned. This application Apr. 20, 1978, Ser. No. 898,084

Int. Cl.[2] **G05D** *3/08*

U.S. Cl. 364—426 **25 Claims**

1. A system for controlling the movement of movable coke plant equipment in relation to stationary coke plant apparatus with which said movable equipment is correlated, comprising:

(a) central processing means which receives information input, in the form of digital number signals, and which memorizes said information input, and which electronically integrates and differentiates said information input into knowledge, and which reacts, in a predetermined manner, to said knowledge by making decisions, and which issues commands based on said decisions, and which transmits said commands, in the form of digital number signals, as information output;

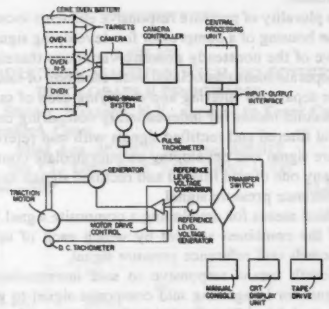
(b) input-output interface means, suitable for transmission of digital number signals, in digital circuitry with said central processing means, said input-output interface means which receives a plurality of different types and forms of electronic signals, translates said electronic signals into said digital number signals, and transmits said digital number signals, as said information input, to said central processing means, and which receives said information output, from said central processing means, as digital number signals, translates those digital number signals into a plurality of different types and forms of electronic signals, and transmits those electronic signals as commanded by said central processing means;

(c) address target means, fixed in relation to said movement of said movable equipment;

(d) visual sensing means, movably mounted in relation to said address target means, directed and focused to sense said address target means;

(e) visual sensing control means, in electronic circuitry with said visual sensing means and said input-output interface means, which electronically differentiates and integrates the visual perceptions of said visual sensing means and transmits that information, as electronic signals, to said input-output interface means;

(f) pulse generation means, in electronic circuitry with said input-output interface means, movable in relation to said movement of said movable equipment, cooperating with said stationary apparatus to cause generation of electronic pulses when said movable equipment is driven, and which transmits said electronic pulses to said input-output interface means;



(g) electrically energizable means for driving the movement of said movable equipment operably engaged with said movable equipment;

(h) drive regulator means, in electrical circuitry with said means for driving, which commands the characterization of the electrical energization of said means for driving, receives feedback signals of the utilization of said energization, compares said feedback signals with said characterization commands, and transmits corrections of said electrical energization such that said feedback signals correlate with said characterization commands;

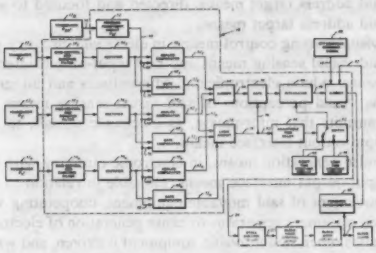
(i) reference level electrical energy generation means, in electrical circuitry with said drive regulator means and in electronic circuitry with said input-output interface means, which receives electronic signals from said input-output means, translates said electronic signals into reference level electrical energy generation signals, and translates said reference level electrical energy generation signals to said drive regulator means such that said characterization commands are formulated by said drive regulator means; and

(j) direction input means, in electronic circuitry with said input-output interface means, by which external directions are fed into said system, translated to electronic signals, and transmitted to said input-output interface means.

4,196,472
STALL CONTROL APPARATUS FOR AXIAL FLOW COMPRESSORS

Gary R. Ludwig, East Amherst, and Rudy H. Arendt, South Wales, both of N.Y., assignors to Calspan Corporation, Buffalo, N.Y.

Filed Sep. 9, 1977, Ser. No. 831,706
Int. Cl.[2] F02C 9/14; F04D 27/02
U.S. Cl. 364—431 12 Claims



1. A stall control system for compressors, comprising:

(a) first means for generating a varying reference pressure signal in response to operating conditions within a compressor,

(b) a plurality of pressure responsive elements located within the housing of a compressor for developing signals indicative of the nonsteady pressure variations therein,

(c) separate means associated with each one of said elements for separately filtering and rectifying each of said signals,

(d) second means for independently comparing each one of said filtered and rectified signals with said reference pressure signal and developing an intermediate control signal if any one of said filtered and rectified signals exceeds said reference pressure signal,

(e) third means for developing a composite signal indicative of the combined amount by which each of said signals exceeds said reference pressure signal,

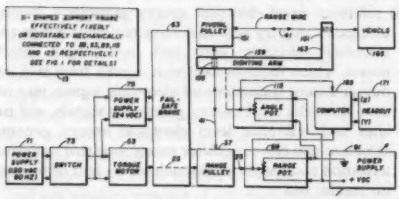
(f) fourth means responsive to said intermediate control signal for integrating said composite signal to generate a control signal for influencing the actuation of a controlled variable within a compressor, and

(g) means for varying the decay rate of said control signal.

4,196,473
REMOTE POSITION PLOTTER

Francisco Chea, Orlando, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 18, 1978, Ser. No. 943,600
Int. Cl.[2] G06G 7/22; G01C 21/20
U.S. Cl. 364—449 23 Claims



1. A remote position plotter system for measuring the X and Y coordinates of a moving vehicle with respect to a known reference point P effected by the intersection of predetermined X and Y coordinate axes, said remote position plotter system comprising in combination:

an alternating current voltage power supply;

a switch electrically connected to the output of said alternating current voltage power supply;

a first direct current voltage power supply electrically connected to the output of said switch;

a U-shaped frame having a pair of substantially parallel walls, each of which has an aligned hole therethrough, respectively, and an interconnecting wall, with a first bearing hole therethrough;

a first shaft rotatably mounted within and extending through the aforesaid pair of aligned holes in said U-shaped frame;

a torque motor mounted on one of the walls of said U-shaped frame, mechanically connected to one end of said first shaft, and electrically connected to the output of said switch;

a pair of bearings respectively mounted on the pair of parallel walls of said U-shaped frame in alignment with the pair of aligned holes located therein for rotatably supporting the aforesaid first shaft;

a range pulley effectively mechanically connected to said first shaft for rotation therewith;

means mounted on said one wall of the aforesaid U-shaped frame, electrically connected to the output of said first direct current voltage power supply and effectively, releasably, mechanically connected to said range pulley for the braking thereof whenever said switch is open and for the release thereof whenever said switch is closed;

a flat surface bearing means having a second bearing hole therethrough mounted on the interconnecting wall of said U-shaped frame, with the second bearing hole thereof disposed in alignment with the first bearing hole in said interconnecting wall;

a second shaft rotatably extending through said first and second bearing holes, said second shaft having a wire hole extending therethrough along the longitudinal axis thereof;

a sighting arm mounted in bearing engagement with the aforesaid flat surface bearing means and mechanically connected to one end of said second shaft for rotation therewith, said sighting arm having an extension portion with a wire hole extending therethrough near one end thereof that is in alignment with the wire hole through said second shaft and an angled portion connected to the other end thereof with another wire hole located therethrough;

a range potentiometer, having a fixed resistance and a rotatable slide in electrical contact therewith, mounted on the other wall of said U-shaped frame, with the rotatable slide thereof effectively connected to the other end of said first shaft for rotation therewith;

an angle potentiometer, having a fixed resistance and a rotatable slide in electrical contact therewith, mounted on the interconnecting wall of said U-shaped frame, with the rotatable slide thereof effectively connected to the other end of said second shaft for rotation therewith;

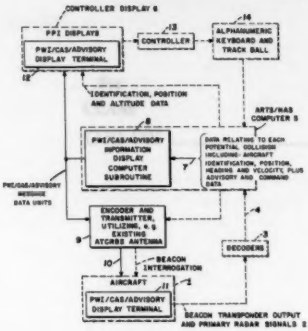
a pivotal pulley mounted adjacent the end of said sighting arm that is connected to the aforesaid second shaft, with one edge thereof in substantial alignment with an imaginary extension of the longitudinal axis of said second shaft; and

a flexible range wire connected to and wrapped at least partially around said range pulley at one end thereof, with the remainder of said flexible range wire threaded through the wire hole of said second shaft and the wire hole of the extension portion of said rotatable sighting arm that is adjacent thereto, partially wrapped around said pivotal pulley, and threaded through the wire hole of the angled portion of said rotatable sighting arm, and with the other end thereof adapted for being connected to a predetermined vehicle.

4,196,474
INFORMATION DISPLAY METHOD AND APPARATUS FOR AIR TRAFFIC CONTROL

William E. Buchanan, Columbia, and Eugene F. Kiley, Bowie, both of Md., assignors to The Johns Hopkins University, Baltimore, Md.

Filed Feb. 11, 1974, Ser. No. 440,974
Int. Cl.[2] G06F *15/48;* G08G *5/00*
U.S. Cl. 364—461 17 Claims


CONTROLLER DISPLAY 6
PPI DISPLAYS
PWI/CAS/ADVISORY DISPLAY TERMINAL
CONTROLLER
ALPHANUMERIC KEYBOARD AND TRACK BALL
IDENTIFICATION, POSITION AND ALTITUDE DATA
ARTS/NAS COMPUTER 5
PWI/CAS/ADVISORY INFORMATION DISPLAY COMPUTER SUBROUTINE
DATA RELATING TO EACH POTENTIAL COLLISION INCLUDING AIRCRAFT IDENTIFICATION, POSITION, HEADING AND VELOCITY, PLUS ADVISORY AND COMMAND DATA
PWI/CAS/ADVISORY MESSAGE DATA UNITS
ENCODER AND TRANSMITTER, UTILIZING, e.g. EXISTING ATCRBS ANTENNA
DECODERS
BEACON INTERROGATION
AIRCRAFT
PWI/CAS/ADVISORY DISPLAY TERMINAL
BEACON TRANSPONDER OUTPUT AND PRIMARY RADAR SIGNALS 2

1. In an air traffic control system including programmable computer means which registers the identity and position of aircraft within a predetermined control area and which is programmed according to a preselected conflict prediction algorithm effective to detect potential collision situations involving aircraft within said control area, the improvement comprising:

a program subroutine means within said computer means and having entered therein data identifying each detected potential collision situation involving aircraft within said control area for establishing a control sequence according to which each aircraft involved in said potential collision situation is to have communicated to it information regarding

(a) the relative position of the other aircraft or object involved in said potential collision situation, and

(b) what action should be taken to avoid said potential collision,

communication means responsive to the control sequence established by said subroutine means for communicating said information to each aircraft involved in said potential collision situation, and

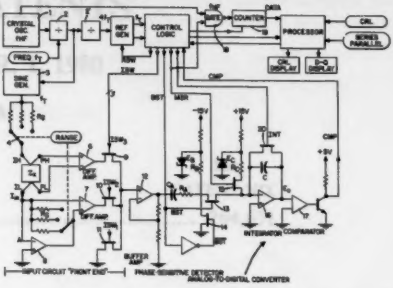
display terminal means in each of said aircraft operably connected to said communication means for displaying the information communicated by said communication means.

4,196,475
METHOD OF AND APPARATUS FOR AUTOMATIC MEASUREMENT OF IMPEDANCE OR OTHER PARAMETERS WITH MICROPROCESSOR CALCULATION TECHNIQUES

Henry P. Hall, Concord, Mass., assignor to GenRad, Inc., Concord, Mass.

Filed Sep. 2, 1976, Ser. No. 719,810
Int. Cl.[2] G01R *27/00*
U.S. Cl. 364—482 33 Claims

1. A method of automatic instrument measurement of impedance, that comprises, measuring voltages across an unknown impedance element and a standard element connected to receive the same a.c. current to produce voltage signals the values of which are meaningless of themselves in terms of impedance values but that have theoretical ratio formulae relationship to the impedance values; converting the voltage

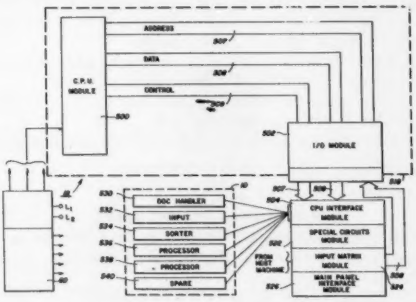


signal values into corresponding digital quantities; employing a microprocessor to automatically electronically calculate the ratio of said quantities in accordance with said formulae; and indicating the calculated ratios to provide impedance measurement of said unknown element.

4,196,476
REPRODUCTION MACHINE WITH SELECTIVELY DISCLOSABLE PROGRAMS

Edward L. Steiner, Macedon, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 30, 1977, Ser. No. 829,017
Int. Cl.[2] G06F *9/06, 3/00;* G03G *15/00*
U.S. Cl. 364—900 12 Claims



1. In a reproduction machine having a console and a controller for the activation of various reproduction machine components, the controller including first and second memory sections, the improvement comprising the method of:

assigning access codes to each of a plurality of operating programs;

storing the operating programs in the first memory section;

storing certain ones of said access codes in the second memory section;

entering an access code into the console; and

denying access to the program corresponding to the access code entered into the consol if its corresponding access code has not been stored in the second memory section.

DESIGN PATENTS

GRANTED APR. 1, 1980

ERRATA

For CLASS	See PATENT NO.
D30–001	264,631

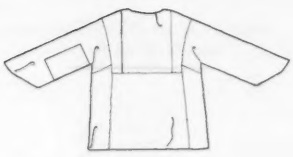
DESIGN PATENTS

GRANTED APR. 1, 1980

ERRATA

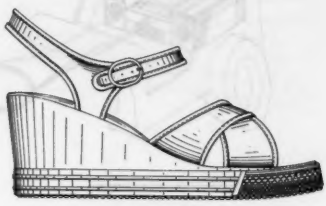
For	See
CLASS	PATENT NO.
D30-001	264,021

254,576
BLOUSE OR THE LIKE
Frances H. Davis, Rte. 2, Box 13, Warrenton, N.C. 27589
Filed Jul. 1, 1976, Ser. No. 701,760
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—219



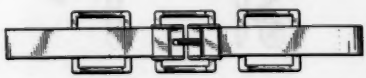
254,577
COMBINED ADULT'S BATH BIB AND BABY'S COVERING
Jane D. Anderson, 90 Vesey St., Brockton, Mass. 02401
Filed Sep. 14, 1977, Ser. No. 833,397
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—228

254,578
OPEN TOE WEDGIE SNEAKER WITH CROSSED VAMP
Norman H. Finn, Waban, Mass., assignor to The United States Shoe Corporation, Cincinnati, Ohio
Filed Nov. 23, 1977, Ser. No. 854,368
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—296

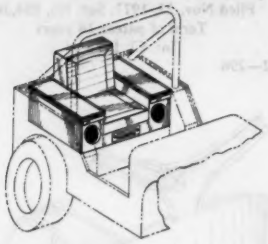


254,579
TENNIS SHOE SOLE
Miguel A. Cassels, Thames 69, Boulogne, Buenos Aires, Argentina
Filed May 22, 1978, Ser. No. 908,469
Claims priority, application Argentina, Dec. 1, 1977, 34875
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—321

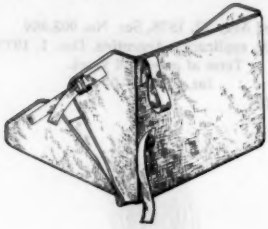
254,580
TENNIS BALL CARRIER
Spencer H. Robley, 1034 Pine St., Santa Monica, Calif. 90405
Filed Jan. 13, 1978, Ser. No. 869,386
Term of patent 14 years
Int. Cl. D2—*07*
U.S. Cl. D2—400



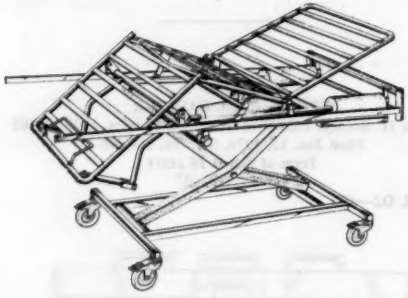
254,581
COMBINED AUXILIARY SEAT STORAGE DEVICE AND AUDIO UNIT FOR JEEP TYPE VEHICLE
Roger Linto, 366 Newton Dr., Lake Orion, Mich. 48035
Filed Sep. 26, 1977, Ser. No. 836,700
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—48



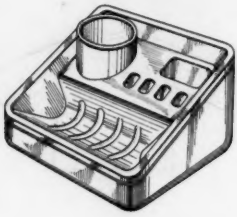
254,582
COLLAPSIBLE SEAT
Albert deSantis, 7929 NW. Third Pl., Margate, Fla. 33063
Filed Dec. 27, 1977, Ser. No. 866,163
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—66



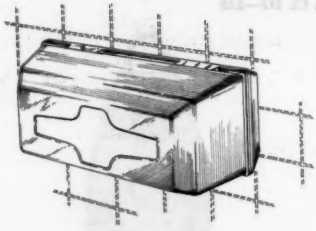
254,583
ADJUSTABLE BED FRAME
Henning Bergenwall, Trollstigen 2, 811 00 Sandviken, Sweden
Filed May 26, 1977, Ser. No. 800,944
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—79



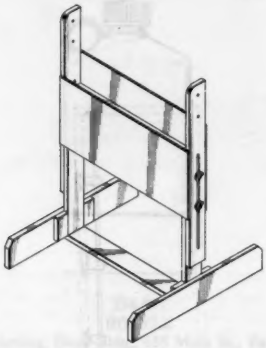
254,584
HOLDER FOR TOILET IMPLEMENTS
Sandi Renko, Padua, Italy, assignor to Carrara & Matta S.p.A., Turin, Italy
Filed Dec. 5, 1978, Ser. No. 966,827
Claims priority, application Italy, Jun. 20, 1978, 53427/78[U]
Term of patent 14 years
Int. Cl. D23—*02*; D6—*04*
U.S. Cl. D6—91



254,585
WALL MOUNTED PLASTIC BAG DISPENSER
Robert A. LeCaire, Jr., DePere, and Barry B. Glashagel, Larsen, both of Wis., assignors to Presto Products Incorporated
Filed Oct. 12, 1977, Ser. No. 841,634
Term of patent 14 years
Int. Cl. D6—*04*; D9—*03*
U.S. Cl. D6—130

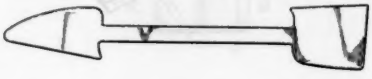


254,586
BASE FOR A DRAFTING TABLE
Thomas Koves, 645 N. Cherokee Ave., Los Angeles, Calif. 90004
Filed Dec. 19, 1977, Ser. No. 862,149
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—196

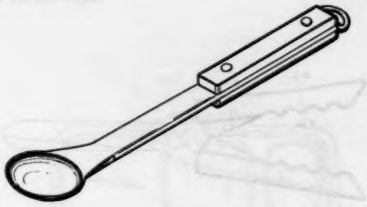


254,587
HANDLE FOR A CULINARY TOOL
Roger L. Kelly, Palatine, Ill., assignor to American Home Products Corporation
Filed Aug. 28, 1978, Ser. No. 937,496
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—132

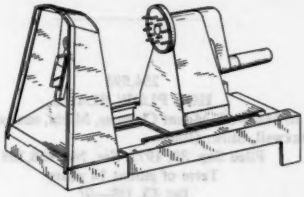
254,588
COMBINED FOOD JAR SCRAPER AND FOOD SPREADER
Steven J. Hogue, 174 Kingsbury Ave., Corning, N.Y. 14830
Filed May 18, 1978, Ser. No. 907,328
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D7—149



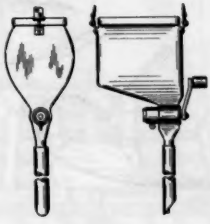
254,589
LADLE
Louis J. Christen, Jr., St. Louis, Mo., assignor to Christen Incorporated, St. Louis, Mo.
Filed Mar. 9, 1978, Ser. No. 885,087
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D7—151



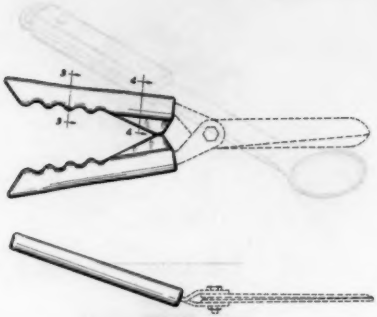
254,590
KITCHEN SLICER
John S. Doyel, 404 W. 20th St., New York, N.Y. 10011
Filed Oct. 22, 1976, Ser. No. 734,758
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—153



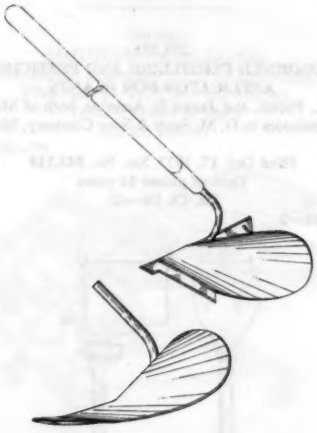
254,591
COMBINED FERTILIZER AND PESTICIDE APPLICATOR FOR PLANTS
Richard L. Parish, and James D. Amerine, both of Marysville, Ohio, assignors to O. M. Scott & Sons Company, Marysville, Ohio
Filed Oct. 17, 1977, Ser. No. 843,119
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—2



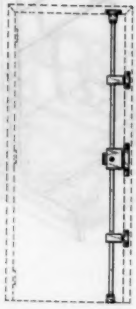
254,592
HANDLE FOR GARDEN SHEARS
Clyde D. Atkins, Conneaut, Ohio, assignor to True Temper Corporation, Cleveland, Ohio
Filed Jun. 23, 1977, Ser. No. 809,289
Term of patent 14 years
Int. Cl. D8—*01*
U.S. Cl. D8—5



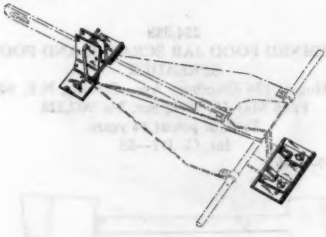
254,593
HOE PLOW BLADE
Rankin B. Maxwell, Mount Clemens, Mich., assignor to Melvin O. Maxwell, Stow, Ohio
Filed Sep. 30, 1977, Ser. No. 838,255
Term of patent 14 years
Int. Cl. D8—*01*
U.S. Cl. D8—11



254,594
LOCKING ASSEMBLY FOR A DOOR
Jacques Picard, Paris, France, assignor to Societe Picard S.A., Paris, France
Filed Jul. 6, 1977, Ser. No. 813,611
Claims priority, application France, Feb. 9, 1977, /7122232
Term of patent 14 years
Int. Cl. D08—*07*
U.S. Cl. D8—341

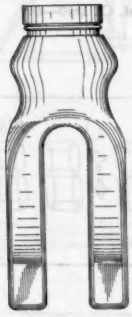


254,595
TWO PIECE DECK MOUNTED ANCHOR CHOCK
Marshall R. Hart, Palm Beach Gardens, Fla., assignor to Attwood Corporation, Lowell, Mich.
Filed Jan. 30, 1978, Ser. No. 873,282
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—354



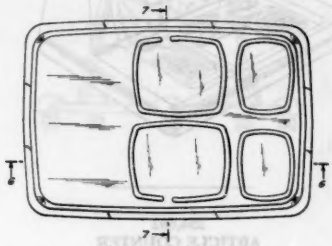
254,596
FLASK
Alan Spigelman, 235 E. 22nd St., New York, N.Y. 10010
Filed Mar. 17, 1977, Ser. No. 779,930
Term of patent 7 years
Int. Cl. D9—*01*
U.S. Cl. D9—47

254,597
BOTTLE
Philip F. Hartung, Dean Bldg., 655 Main St., East Greenwich, R.I. 02818
Filed Jul. 12, 1977, Ser. No. 814,964
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—149



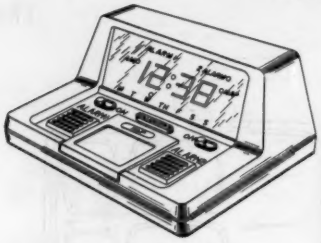
254,598
BOTTLE OR SIMILAR ARTICLE
Adam J. Grodin, Forest Hills, N.Y., assignor to American Cyanamid Company, Stamford, Conn.
Filed Oct. 21, 1977, Ser. No. 844,247
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—157

254,599
COMBINED INSULATED FOOD SERVICE TRAY AND COVER
Edgar Otto, Scotch Plains, N.J., assignor to Therma-Tray Corporation, South Plainfield, N.J.
Filed May 4, 1977, Ser. No. 793,852
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—185

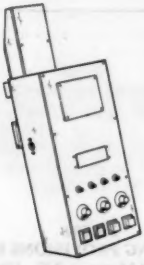


254,600
CAMPING PROVISIONS KIT
George P. Jones, III, 618 Manzano, NE., Albuquerque, N. Mex. 87110
Filed Jun. 3, 1977, Ser. No. 803,396
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—193

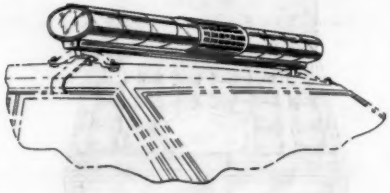
254,601
PROGRAMMABLE DIGITAL CLOCK
Nicholas F. Talesfore, San Jose, Calif., assignor to Fairchild Camera and Instrument Corp., Mountain View, Calif.
Filed Jan. 11, 1978, Ser. No. 868,605
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—15



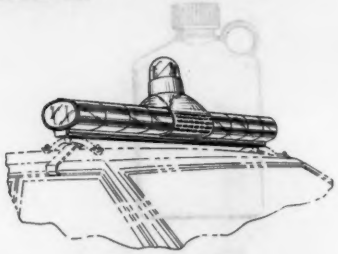
254,602
ARTICLE COUNTER
Larry C. Gess, 13345 Dunlap Rd., LaSalle, Mich. 48145
Filed Sep. 30, 1977, Ser. No. 838,256
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—97



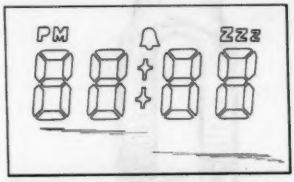
254,603
COMBINED LIGHT AND SIREN SPEAKER HOUSING FOR EMERGENCY VEHICLE
Earl W. Gosswiller, Clarendon Hills, Ill., assignor to Federal Signal Corporation, Oak Brook, Ill.
Filed Feb. 27, 1978, Ser. No. 881,838
Term of patent 14 years
Int. Cl. D10—*06*; D26—*06*
U.S. Cl. D10—114



254,604
COMBINED LIGHT AND SIREN SPEAKER HOUSING FOR EMERGENCY VEHICLE
Earl W. Gosswiller, Clarendon Hills, Ill., assignor to Federal Signal Corporation, Oak Brook, Ill.
Filed Feb. 27, 1978, Ser. No. 881,876
Term of patent 14 years
Int. Cl. D10—*06*; D26—*06*
U.S. Cl. D10—114

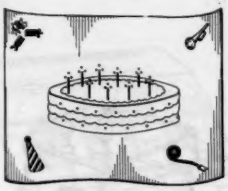


254,605
ELECTROOPTIC DIGITAL ALARM FACE
Roland C. Pummer, Hightstown, N.J., assignor to Timex Corporation, Waterbury, Conn.
Filed Oct. 3, 1977, Ser. No. 838,525
Term of patent 14 years
Int. Cl. D10—*07*
U.S. Cl. D10—125

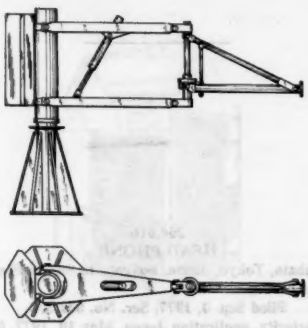


254,606
DOUBLE RING
Mildred Abelson, 15 Sycamore La., Roslyn Heights, N.Y. 11577
Filed Jul. 14, 1978, Ser. No. 924,865
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—34

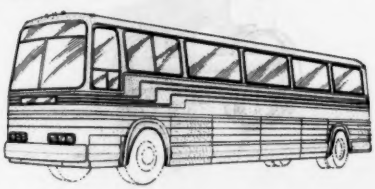
254,607
BIRTHDAY FLAG OR BANNER
William J. Crane, 1 Maple Ave., Paoli, Pa. 19301
Filed Jul. 18, 1977, Ser. No. 816,545
Term of patent 14 years
Int. Cl. D11—*05*
U.S. Cl. D11—172



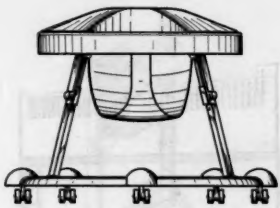
254,608
COMBINED HOISTING AND POSITIONING ARM
Paul S. Mefferd, and Thomas A. Mefferd, both of Laurens, Iowa, assignors to Mefferd Industries, Inc., Laurens, Iowa
Filed Aug. 18, 1977, Ser. No. 825,550
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D12—54



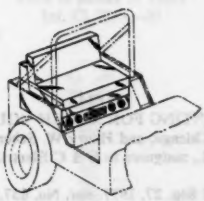
254,609
BUS BODY
Charles S. Neal, Pontiac; Michael W. Lathers, Bloomfield Hills, and Piere Ollier, Sterling Heights, all of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Sep. 20, 1978, Ser. No. 945,173
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—84



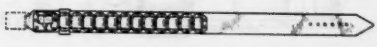
254,610
INFANT WALKING TRAINER
Kenzou Kassai, Higashishimizu, Japan, assignor to Kassai Kabushiki Kaisha, Osaka, Japan
Filed Sep. 16, 1977, Ser. No. 834,647
Term of patent 14 years
Int. Cl. D12—*12*
U.S. Cl. D12—130



254,611
COMBINED STORAGE COMPARTMENT, AUXILIARY REAR SEAT AND AUDIO UNIT FOR A JEEP TYPE VEHICLE
Roger Linto, 366 Newton Dr., Lake Orion, Mich. 48035
Filed Sep. 21, 1978, Ser. No. 944,262
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—155



254,612
BELT MOUNTED BATTERY-TYPE ELECTRICAL POWER UNIT
James W. Gatton, P.O. Box 27, State Rte. 97 East, Bellville, Ohio 44813
Filed Jun. 22, 1977, Ser. No. 808,888
Term of patent 14 years
Int. Cl. D13—*02*
U.S. Cl. D13—11



254,613

PROGRAMMABLE SEQUENCE CONTROLLER

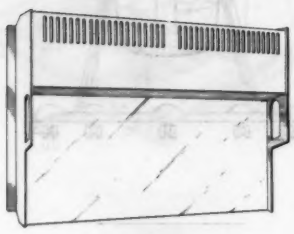
Charles M. Ault, Arlington, Mass., assignor to Andover Controls Corporation, Andover, Mass.

Filed Jul. 25, 1977, Ser. No. 818,984

Term of patent 14 years

Int. Cl. D13—*03;* D14—*02*

U.S. Cl. D13—12



254,614

HINGE MOUNTING FOR A HIGH VOLTAGE FUSE

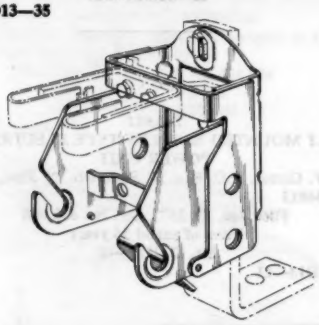
Bruce A. Biller, Chicago, and Henry W. Scherer, Mount Prospect, both of Ill., assignors to S & C Electric Company, Chicago, Ill.

Filed Sep. 27, 1977, Ser. No. 837,240

Term of patent 14 years

Int. Cl. D13—*03*

U.S. Cl. D13—35



254,615

HINGE MOUNTING FOR HIGH VOLTAGE OF FUSE

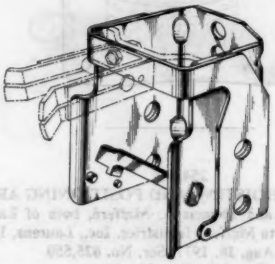
David M. Evans, Palatine, and Henry W. Scherer, Mount Prospect, both of Ill., assignors to S & C Electric Company, Chicago, Ill.

Filed Sep. 27, 1977, Ser. No. 837,246

Term of patent 14 years

Int. Cl. D13—*03*

U.S. Cl. D13—35



254,616

HEAD PHONE

Hiroshi Tabata, Tokyo, Japan, assignor to Sansui Electric Co., Ltd., Tokyo, Japan

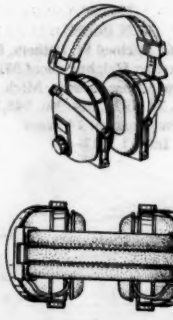
Filed Sep. 8, 1977, Ser. No. 831,578

Claims priority, application Japan, May 19, 1977, 52-19178

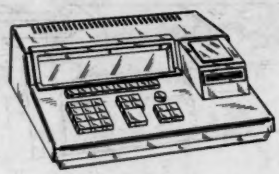
Term of patent 14 years

Int. Cl. D14—*02*

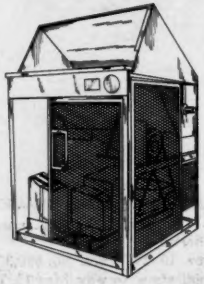
U.S. Cl. D14—36



254,617
BILLING MACHINE
Tsutomu Yamasaki, Osaka, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Feb. 16, 1978, Ser. No. 878,490
Claims priority, application Japan, Aug. 26, 1977, 52-34176
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—45



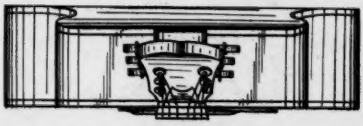
254,618
INSULATION APPLICATION UNIT
Henry V. Sperber, Englewood, Colo., assignor to Ark-Seal Corporation, Denver, Colo.
Filed Aug. 16, 1978, Ser. No. 934,006
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D15—122



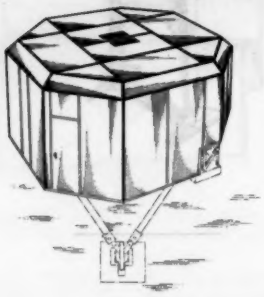
254,619
REVOLVING WIRE TUMBLER FOR REMOVING FLASH FROM PLASTIC MOLDED PARTS
Henry J. Andrykovitz, 427 Hory St., Roselle, N.J. 07203
Filed Jun. 20, 1977, Ser. No. 808,241
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—124

254,620
FRAME FOR HYDRAULIC JACK PRESS OR THE LIKE
Ralph E. Reiner, 6474 Chestnut La., Orchard Park, N.Y. 14127
Filed Nov. 4, 1977, Ser. No. 848,455
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—141

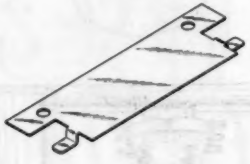
254,621
GUITAR OR SIMILAR ARTICLE
Bruce J. Bolen, Lansing, Ill., assignor to Norlin Industries, Inc., Lincolnwood, Ill.
Filed Mar. 21, 1977, Ser. No. 779,461
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D17—19



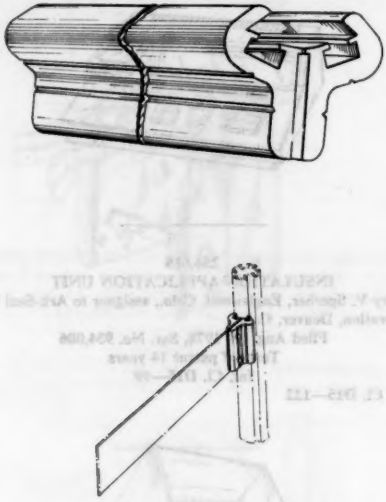
254,622
SIMULATOR ENCLOSURE
Alan A. Trussler, Worthing, England, assignor to The Singer Company, Binghamton, N.Y.
Filed May 10, 1977, Ser. No. 795,518
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D19—63



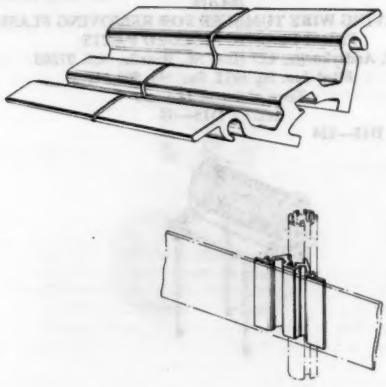
254,623
FASTENER FOR PERFORATED DOCUMENTS
Ivo Plecko, Ul. Pohorskega bataljona 211, 61000 Ljubljana, Yugoslavia
Filed Jun. 3, 1977, Ser. No. 803,452
Term of patent 14 years
Int. Cl. D19—*99*
U.S. Cl. D19—65



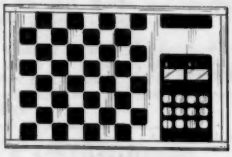
254,624
SINGLE SIGN HOLDER BRACKET
Saemund Stenersen, Kongsvinger, Norway, assignor to Norsk Hydro a.s, Oslo, Norway
Filed Nov. 10, 1977, Ser. No. 850,376
Claims priority, application Norway, Apr. 12, 1977, 58314/77
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D20—43



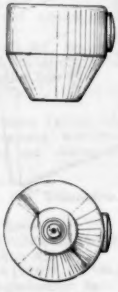
254,625
DOUBLE SIGN HOLDER BRACKET
Saemund Stenersen, Kongsvinger, Norway, assignor to Norsk Hydro a.s, Oslo, Norway
Filed Nov. 10, 1977, Ser. No. 850,377
Claims priority, application Norway, May 12, 1977, 58314/77
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D20—43



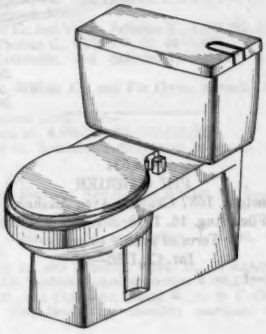
254,626
ELECTRONIC GAME BOARD
Stanley W. Bialek, Chicago, Ill., assignor to Fidelity Electronics, Ltd., Miami, Fla.
Filed Aug. 26, 1977, Ser. No. 828,142
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—24



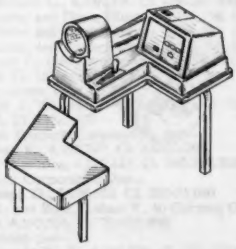
254,627
HAND-HELD SHOWER HEAD
Charles M. Kelly, 1016 St. Margarets Dr., and Francis C. Keffer, 1168 Summit Dr., both of Annapolis, Md. 21401
Filed Aug. 19, 1977, Ser. No. 826,238
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—35



254,628
COMBINED TOILET AND FLUSH TANK
Ulrich Witzig, Wolfhausen-Bubikon, Switzerland, assignor to Geberit AG, Jona, Switzerland
Filed Jan. 28, 1977, Ser. No. 763,455
Claims priority, application Switzerland, Sep. 16, 1976, 108753/76
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—65

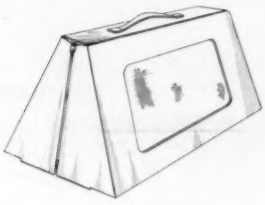


254,629
SPHYGMOMETER
David H. Yen, Saratoga, Calif., assignor to Filac Corporation
Filed Oct. 20, 1977, Ser. No. 844,111
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D24—21



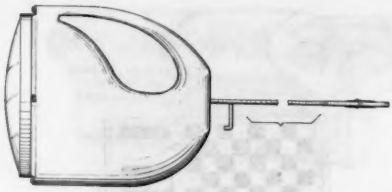
254,630
FIRE LADDER RUNG
James B. Aberer, Lake Winnebago, Mo.; John W. Breeden, Leawood, Kans., and Richard J. Ostroski, Kansas City, Mo., assignors to Rival Manufacturing Company, Kansas City, Mo.
Filed Jan. 16, 1978, Ser. No. 869,939
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D25—69

254,631
PET CARRIER
D. Janine Albright, 1687 Chateau Ave., Anaheim, Calif. 92802
Filed Aug. 16, 1978, Ser. No. 934,528
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—1

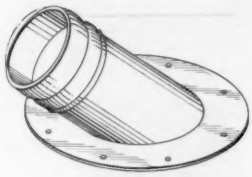


254,632
SURGICAL LIGHT
Thomas Brendgord, Erie, Pa., assignor to American Sterilizer Company, Erie, Pa.
Filed Nov. 2, 1977, Ser. No. 847,726
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—65

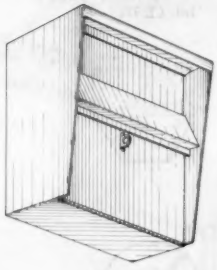
254,633
AUTOMOBILE TROUBLE LIGHT OR SIMILAR ARTICLE
Arnold M. Simmons, 14482 Golden Oak Rd., Centreville, Va. 22020
Filed Jul. 14, 1978, Ser. No. 924,815
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D26—50



254,634
HOUSING FOR BOAT LIGHT
Theodore Ziaylek, Jr., 140 Riverview Ave., Yardley, Pa. 19067, assignor to Theodore Ziaylek, Jr., Yardley, Pa.
Filed Dec. 12, 1977, Ser. No. 859,351
Term of patent 14 years
Int. Cl. D26—*06*
U.S. Cl. D26—36



254,635
MAILBOX
William Earle, P.O. Box 20666, Phoenix, Ariz. 85036
Filed Nov. 23, 1977, Ser. No. 854,107
Term of patent 14 years
Int. Cl. D31—*00*
U.S. Cl. D99—33



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TO WHOM

PATENTS WERE ISSUED ON THE 1ST DAY OF APRIL, 1980

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Adachi, Keiichi; Hirano, Shigeo; Ikeda, Tadashi; and Mikami, Takeshi, to Fuji Photo Film Co., Ltd. Silver halide photographic material containing ultraviolet light absorbing agent. 4,195,999, Cl. 430-507.000.

Adam, Fritz G., to ITT Industries, Inc. Semiconductor storage cell. 4,196,441, Cl. 357-41.000.

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Simone, Andre A.; Ogren, Dennis F.; Adams, William R.; and Kohn, Harold B., 4,196,080, Cl. 210-83.000.

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Denny, John L.; and Alley, Robert H., 4,195,726, Cl. 198-812.000.

AGA Heating AB: *See—*
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Agence Nationale de Valorisation de la Recherche (ANVAR): *See—*
Delhaye, Michel M.; Dhamelincourt, Paul A.; and da Silva, Edouard F., 4,195,930, Cl. 356-301.000.

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Aktiebolaget Electrolux: *See—*
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Aktiebolaget Platmanufaktur AB: *See—*
Jakobsen, Kjell M., 4,196,039, Cl. 156-580.100.

Aktiebolaget Statens Skogindustrier: *See—*
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Aktiengesellschaft Kuhnle, Kopp & Kausch: *See—*
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Newman, Thomas C., 4,195,977, Cl. 44-71.000.
Roskott, Lodewijk; and Schroeder, Arnold, 4,196,269, Cl. 525-27.000.
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Alcan Aluminum Corporation: *See—*
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Aldridge, Clyde L.; and Bearden, Roby, Jr., to Exxon Research & Engineering Co. Hydroconversion process. 4,196,072, Cl. 208-10.000.

Allen, Ronald E.; and Cusimano, David W., to B. F. Goodrich Company, The. Tire bead ring assembly machine. 4,196,036, Cl. 156-422.000.

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Ryczek, William G., 4,195,644, Cl. 130-27.0JT.
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Allstate Hosiery Sales, Inc.: *See—*
Goldstein, Ralph; and Swanson, Ralph S., 4,195,497, Cl. 66-185.000.

Almeida, June D.; and Edwards, David C., to Burroughs Wellcome Co. Biological preparations. 4,196,191, Cl. 424-89.000.

Alps Electric Co., Ltd.: *See—*
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Aluma Systems Incorporated: *See—*
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Amerace Corporation: *See—*
Heenan, Sidney A., 4,195,945, Cl. 404-16.000.
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Lindlau, Paul F., 4,195,901, Cl. 339-198.0GA.

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Fanshawe, William J.; Epstein, Joseph W.; Crawley, Lantz S.; Hofmann, Corris M.; and Safir, Sidney R., 4,196,120, Cl. 260-456.00P.
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Lutz, Albert W.; and Diehl, Robert E., 4,196,142, Cl. 260-562.00B.
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Wang, Samuel S.; Lewellyn, Morris E.; and Smith, Eugene L., Jr., 4,196,092, Cl. 252-61.000.

American Ecosystems, Inc.: *See—*
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Amos, Lynn G.; and Buck, Robert T., to Corning Glass Works. Hand-held pipetter. 4,195,526, Cl. 73-425.600.

AMP Incorporated: *See—*
Hughes, Donald W. K., 4,195,900, Cl. 339-125.00R.

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Anantha, Narasipur G.; Bhatia, Harsaran S.; Gaur, Santosh P.; and Pogge, Hans B., to International Business Machines Corporation. Lateral PNP or NPN with a high gain. 4,196,440, Cl. 357-35.000.

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Macpherson, Robert B., 4,195,382, Cl. 15-250.320.

Anderson, John A., to British Gas Corporation. Coal gasification plant. 4,195,978, Cl. 48-62.00R.

Anderson, John W., to H. H. Robertson Company. Four corner wall panel joint. 4,195,459, Cl. 52-394.000.

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Angst, Arthur, to Reishauer AG. Apparatus for the control of a tool in a gear processing machine. 4,195,446, Cl. 51-105.0GG.

Anlauf, Jurgen; and Schnurle, Hans, to Robert Bosch GmbH. Method and apparatus for determining the injection time in externally ignited internal combustion engines. 4,195,598, Cl. 123-32.0EA.

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Lehmann, Roger W., 4,195,776, Cl. 238-10.00F.

Ausnit, Steven, to Minigrip, Inc. Method of making extruded construction for bags. 4,196,030, Cl. 156-91.000.

Austin Industries, Inc.: *See—*
Helams, Paul A., 4,195,860, Cl. 280-460.00A.

Avco Corporation: *See—*
Hornak, Steven S.; Lowdermilk, Robert S.; and Miller, Robert A., 4,196,020, Cl. 134-167.00R.
Jewett, Charles S.; and Ruzicka, Harry L., 4,196,337, Cl. 219-121.0EM.

Avidor, Joel M.; and Knight, Charles J., to United States of America, Navy. Method and apparatus for injecting gas into a laser cavity. 4,196,401, Cl. 331-94.50G.

Awaya, Juichi: *See—*
Omura, Satoshi; Tanaka, Haruo; Awaya, Juichi; and Hata, Toju, 4,196,266, Cl. 435-125.000.

Azuma, Shizuo; Saiki, Noritsugu; and Kawase, Shoji, to Teijin Limited. Process for producing polyesters having a high degree of polymerization. 4,196,279, Cl. 528-275.000.

B. F. Goodrich Company, The: *See—*
Allen, Ronald E.; and Cusimano, David W., 4,196,036, Cl. 156-422.000.

Baba, Mitsuru: *See—*
Iyeta, Motoi; and Baba, Mitsuru, 4,196,379, Cl. 318-601.000.

Babcock & Wilcox Company, The: *See—*
Kalen, David D.; and Mitchem, Jerry W., 4,195,868, Cl. 292-256.670.
Klahn, Francis C.; Nolan, John H.; anf Wills, Christopher, 4,195,869, Cl. 292-256.670.
Mitchem, Jerry W.; Kalen, David D.; and Klahn, Francis C., 4,196,047, Cl. 176-15.000.

Bacehowski, David V.; and VanBaelen, Armand R., to Baxter Travenol Laboratories, Inc. Connection member. 4,196,088, Cl. 210-435.000.

Bader, Fredric G.; and Burke, Howard J., to Upjohn Company, The. Continuous flow process for the preparation of o-chloranil from tetrachlorocatechol. 4,196,132, Cl. 260-396.00R.

Baghdadi, Aslan; and Gurtler, Richard W., to Motorola, Inc. Self-seeding conversion of polycrystalline silicon sheets to macrocrystalline by zone melting. 4,196,041, Cl. 156-620.000.

Bailey, James E.: *See—*
Kanerva, Robert A.; and Bailey, James E., 4,195,656, Cl. 137-458.000.

Baillie, William R. Door latch. 4,195,867, Cl. 292-174.000.

Baker, Lamar T., to Xerox Corporation. Time slot end predictor. 4,196,357, Cl. 307-200.00B.

Baldwin, Richard E. Solar greenhouse. 4,195,441, Cl. 47-17.000.

Ball, Frank J.; Powers, John R.; and Vardell, William G., to Westvaco Corporation. Vegetable oil adducts. 4,196,134, Cl. 260-404.800.

Baltimore Aircoil Company, Inc.: *See—*
Schinner, Edward N., 4,196,157, Cl. 261-155.000.

Banzoli, Valeriano; Di Tella, Vincenzo; and Vielmo, Paolo, to Tecnomare, S.P.A. Extracting ores from the sea bottom. 4,195,426, Cl. 37-60.000.

Baran, Paul, to Termcom, Inc. Electroresistive printing apparatus. 4,195,937, Cl. 400-120.000.

Barclay, Donald J.; and Vigar, James M., to International Business Machines Corporation. Method of brightening electrodeposited chromium. 4,196,062, Cl. 204-36.000.

Bardonnet, Pierre, to Essilor International (Compagnie Generale d'Optique) Societe Anonyme. Machine for edging and bevelling ophthalmic lenses. 4,195,445, Cl. 51-101.0LG.

Bardsley, Robert F.; Bortkevicius, Jonas; and Schoonmaker, Charles D., to General Foods Corporation. Apparatus and method for the preparation of a food product. 4,195,559, Cl. 99-353.000.

Barlow, Sidney D., to Mark-Tex Corporation. Marking pen writing tip. 4,195,941, Cl. 401-214.000.

Barnes, Clive; and Ward, John J. B., to International Lead Zinc Research Organization, Inc. Electrodeposition of black chromium. 4,196,063, Cl. 204-43.00R.

Bartelink, Everhard H. B. Telephone intercom system. 4,196,317, Cl. 179-37.000.

Barthelmes, Rainer; and Rathel, Heinrich, to Robert Bosch GmbH. Tension control for a valve. 4,195,659, Cl. 137-501.000.

Bartlett, Thomas G. E., to Castrol South Africa (Proprietary) Limited. Device for dosing a flowing fluid stream with an additive. 4,195,711, Cl. 184-55.00A.

Bartling, Lothar: *See*—
Augustin, Friedrich; and Bartling, Lothar, 4,196,259, Cl. 428-492.000.

Bartok, Mihaly: *See*—
Molnar, Arpad; Felfoldi, Karoly; Bartok, Mihaly; Karpati, Egon; and Szporny, Laszlo, 4,196,206, Cl. 424-250.000.

BASF Aktiengesellschaft: *See*—
Decker, Martin; Hoffmann, Herwig; Hupfer, Leopold; and Toussaint, Herbert, 4,196,147, Cl. 260-577.000.
Huchler, Otto H.; Winderl, Siegfried; Mueller, Herbert; and Hoffmann, Herwig, 4,196,130, Cl. 260-346.110.
Kothe, Wilfried; and Grunwald, Wolfgang, 4,195,974, Cl. 8-138.000.
Manzke, Klaus; Hammerschmitt, Peter; and Uhl, Karl, 4,196,456, Cl. 360-106.000.

BASF Farben & Fasern: *See*—
Augustin, Friedrich; and Bartling, Lothar, 4,196,259, Cl. 428-492.000.

Bass, Merlyn D.; Wolf, David L.; Grimstad, Ronald N.; and Flenniken, John M., to Deere & Company. Hitch adapter. 4,195,704, Cl. 180-14.00R.

Bastenhof, Dirk, to Societe d'Etudes de Machines Thermiques S.E.M.T. Method and device for stopping a fuel-injection internal combustion engine in case of overspeed. 4,195,610, Cl. 123-139.0AZ.

Baucom, Keith K. Flow regulating device useable in plasma pheresis. 4,195,631, Cl. 128-214.00R.

Baxter Travenol Laboratories, Inc.: *See*—
Bacehowski, David V.; and VanBaelen, Armand R., 4,196,088, Cl. 210-435.000.
Lamadrid, Rene; Kitchenham, Albert; and Jennings, C. Michael, 4,195,766, Cl. 233-26.000.

Bayer Aktiengesellschaft: *See*—
Ebeling, Wilfried; Schulte, Klaus; and Kreuer, Dieter, 4,195,527, Cl. 73-434.000.
Kranz, Eckart; Schubart, Rudiger; Schwarz, Herbert; Siegle, Peter; and Steude, Heinrich, 4,196,150, Cl. 260-593.00H.
Naumann, Klaus, 4,196,304, Cl. 562-401.000.
Schreckenberg, Manfred; Konig, Klaus; Freitag, Dieter; and Serini, Volker, 4,196,276, Cl. 528-176.000.
Zecher, Wilfried; and Merten, Rudolf, 4,196,274, Cl. 528-73.000.

Bayless, Robert G.: *See*—
Bradley, Hubert, Jr.; Bayless, Robert G.; Hart, Ronald L.; and Davis, Danny A., 4,195,645, Cl. 131-2.000.

BBC Brown Boveri & Company Limited: *See*—
Luchinger, Hanspeter; Snedkerud, Ole; and Wyss, Jurg, 4,196,392, Cl. 455-117.000.

Beacco, Enzo; Bernardi, Luigi; Di Salle, Enrico; Falconi, Giovanni; and Patelli, Bianca, to Societa Farmaceutici Italia S.p.A. Ergoline derivatives and a process for their preparation. 4,196,288, Cl. 544-125.000.

Bearden, Roby, Jr.: *See*—
Aldridge, Clyde L.; and Bearden, Roby, Jr., 4,196,072, Cl. 208-10.000.

Beatty, Joseph M., II: *See*—
Melville, James C.; Beatty, Joseph M., II; and Satcher, Joe H., Jr., 4,196,017, Cl. 127-41.000.

Becker, Hanjorg: *See*—
Leeker, Jurgen; Becker, Hanjorg; and Rombach, Rudolf, 4,195,573, Cl. 102-92.700.

Becker, Joseph, Jr.; and McClelland, Ronald O., to Koppers Company, Inc. One-spot coke quenching apparatus. 4,196,054, Cl. 202-227.000.

Becker, Kunibert; Heyer, Willy; Plevak, Lubomir; and Dodt, Jurgen, to Gewerkschaft Eisenhutte Westfalia. Advance mechanism for a mine roof support assembly. 4,195,953, Cl. 405-300.000.

Beduhn, Daniel E.; and Morrow, James G., Sr., to Manitowoc Company, Inc., The. Lift crane support system. 4,195,740, Cl. 212-66.000.

Beecham Group Limited: *See*—
Clayton, John P., 4,196,214, Cl. 424-283.000.

Beehive International: *See*—
Price, Edward G.; and Rasmussen, Lewis C., 4,195,642, Cl. 128-689.000.

Beeker, Charles W.; and Pribyl, William J., Jr., to United States of America, Army. Modular wheel dispenser. 4,195,571, Cl. 102-89.0CD.

Beerbower, Alan: *See*—
Berkowitz, Leonard; Geyer, Jerome; Beerbower, Alan; and Asher, William J., 4,196,077, Cl. 210-22.00R.

Beggs, Donald; and Meissner, David C., to Midrex Corporation. Apparatus for reducing particulate iron oxide to molten iron with solid reductant. 4,195,821, Cl. 266-156.000.

Behnke, Robert C. Arm flesh injection site clamp. 4,195,636, Cl. 128-346.000.

Behrends, Bertwin E.: *See*—
Shelby, Robert L.; and Behrends, Bertwin E., 4,195,480, Cl. 60-486.000.

Bell, Edward D.: *See*—
Replogle, John A.; Clemmens, Albert J.; and Bell, Edward D., 4,195,519, Cl. 73-215.000.

Bell, Malcolm R.; and Oesterlin, Rudolf, to Sterling Drug Inc. Cyclopenta[c]pyrrole derivatives. 4,196,296, Cl. 546-272.000.

Bell, Norman H., to Great Northern Corporation; and Presto Products, Inc. Supporting and spacing member for web material rolls. 4,195,732, Cl. 206-391.000.

Bell Telephone Laboratories, Incorporated: *See*—
Bosik, Barry S., 4,196,321, Cl. 179-175.20R.
Gates, Frank V., 4,196,319, Cl. 179-146.00R.
McEowen, James R.; Smith, Robert M.; and Wang, Tse L., 4,196,316, Cl. 179-18.0ES.
Nelson, Dale H., 4,196,318, Cl. 179-84.0VF.
Niehaus, William C.; and Wemple, Stuart H., 4,196,439, Cl. 357-22.000.
Shay, Joseph L.; and Wagner, Sigurd, 4,196,263, Cl. 429-111.000.
Smith, Peter W., 4,196,396, Cl. 330-4.300.

Beloit Corporation: *See*—
Mathews, Gerald A., 4,195,417, Cl. 34-110.000.
Ogden, William L., 4,196,045, Cl. 162-117.000.

Belokin, Martin P. Retrievable projectile gun. 4,195,615, Cl. 124-16.000.

Bendix Corporation, The: *See*—
Cramer, Robert L., 4,195,817, Cl. 251-340.000.
Luchaco, David G., 4,195,599, Cl. 123-32.0EA.
Massing, Lyle E., 4,195,714, Cl. 188-71.500.
Taplin, Lael B., 4,195,604, Cl. 123-119.00A.

Bengtsson, Anders G.; and Eng, Kjell, to AB Eiser. Garment for use in vigorous physical activities. 4,195,364, Cl. 2-81.000.

Benjamin, Robert E.; and Edging, Thomas E., to Stauffer Chemical Company. Alkali metal aluminum phosphate. 4,196,226, Cl. 426-551.000.

Benner, Timothy E.: *See*—
Month, Alfred; and Benner, Timothy E., 4,196,372, Cl. 315-10.000.

Bennett, James G., Jr.; and Cooper, Glenn D., to General Electric Company. Method for the controlled polymerization of polyphenylene oxide polymers. 4,196,278, Cl. 528-215.000.

Benoit, Roland A.; and Guillot, Edmund P., to Interroyal Corporation. Extensible support assembly for overbed table. 4,195,578, Cl. 108-144.000.

Bentley, Donald J., to Bentley Laboratories, Inc. Membrane fluid transfer method and apparatus. 4,196,075, Cl. 210-19.000.

Bentley Laboratories, Inc.: *See*—
Bentley, Donald J., 4,196,075, Cl. 210-19.000.

Benton, Michael K.; and Sangani, Suresh H., to Burroughs Corporation. Test generator for random access memories. 4,195,770, Cl. 371-21.000.

Bentzen-Bilkvist, Ib; and Hallett, Robert L., to Dundee Cement Company. Mechanical aerator for suction nozzle. 4,195,954, Cl. 406-135.000.

Berg, Charles A., to Pyreflex Corporation. Precise thermal processing apparatus. 4,195,820, Cl. 266-87.000.

Berg, Erik L., to Telefonaktiebolaget L M Ericsson. Method and arrangement for transfer of data information to two parallelly working computer means. 4,196,470, Cl. 364-200.000.

Berg, Rolf, to Aktiebolaget Statens Skogindustrier. Apparatus for manufacturing cylindrical tubes. 4,196,037, Cl. 156-429.000.

Berger, Ernst; and Herwegh, Norbert, to Datwyler AG, Schweiz. Kabel-Gummi-u.Kunststoffwerke. Gasket strip for butt joint compression seal. 4,195,850, Cl. 277-12.000.

Bergman, Charles T.; and Zwieg, Robert L., to Brandt, Inc. Coin wrapper discharge assembly. 4,195,463, Cl. 53-52.000.

Bergwerksverband GmbH: *See*—
Szurman, Erich; Worberg, Rainer; and Eisenhut, Werner, 4,196,052, Cl. 202-138.000.

Berkowitz, Leonard; Geyer, Jerome; Beerbower, Alan; and Asher, William J., to Exxon Research & Engineering Co. Sewage sludge dewatering. 4,196,077, Cl. 210-22.00R.

Bernard, Vincent E., to Jimmy Dean Meat Company, The. Portion controlled frozen food. 4,195,489, Cl. 62-63.000.

Bernardi, Luigi: *See*—
Beacco, Enzo; Bernardi, Luigi; Di Salle, Enrico; Falconi, Giovanni; and Patelli, Bianca, 4,196,288, Cl. 544-125.000.

Berninger, Walter H.; and Redington, Rowland W., to General Electric Company. Multiple purpose high speed tomographic x-ray scanner. 4,196,352, Cl. 250-445.00T.

Berretz, Manfred. Corrosion resistant glasses that contain chemical additives for application over metal substrates. 4,196,004, Cl. 106-48.000.

Berry, Richard C., to Crouse-Hinds Company. Cable tray conduit clamp. 4,195,806, Cl. 248-70.000.

Berstein, Garrj: *See*—
Wittkopp, Helmut; Berstein, Garrj; Heymanns, Lothar; and Hansen, Willi, 4,195,957, Cl. 408-148.000.

Bertin, Jacques. Shaft seal assemblies. 4,195,854, Cl. 277-153.000.

Besins, Jean-Louis A. Orally administrable form of progesterone. 4,196,188, Cl. 424-37.000.

Best Lock Corporation: *See*—
Best, Walter E.; and McCullum, R. Gene, 4,195,502, Cl. 70-224.000.
Foshee, William R., 4,195,504, Cl. 70-369.000.

Best, Walter E.; and McCullum, R. Gene, to Best Lock Corporation. Break-away door knob. 4,195,502, Cl. 70-224.000.

Bettis Corporation: *See*—
Thompson, Richard L.; Hubbert, Murray J.; and Wade, Vernon J., 4,195,816, Cl. 251-229.000.

Beyer, David M. Game and apparatus therefor. 4,195,836, Cl. 273-1.00R.

Beyer, Douglas E.: *See*—
Tung, Lu H.; Lo, Grace Y-S.; and Beyer, Douglas E., 4,196,154, Cl. 260-665.00R.

Bhatia, Harsaran S.: *See*—
Anantha, Narasipur G.; Bhatia, Harsaran S.; Gaur, Santosh P.; and Pogge, Hans B., 4,196,440, Cl. 357-35.000.

BICC Limited: *See*—
Dean, Noel S.; and Lea, Frank, 4,195,906, Cl. 350-96.230.

Bigley, Richard J.: *See*—
Douglas, Jack E.; and Bigley, Richard J., 4,195,681, Cl. 160-371.000.

Bingham, Douglas B.: *See*—
Wimmer, Guenther W.; and Bingham, Douglas B., 4,196,345, Cl. 235-435.000.

Bintz, Miles F.; and Dehmer, Raymond L., deceased (by Dehmer, Mary Mae, administrator), to General Electric Company. Liquid-cooled transition member to turbine inlet. 4,195,474, Cl. 60-730.000.

Bitzer, Diethelm; and Lohmann, Dieter, to Ciba-Geigy Corporation. Process for coating inorganic substrates with carbides, nitrides and-/or carbonitrides. 4,196,233, Cl. 427-249.000.

Blank, Wallace J.: *See*—
Larson, Thomas A.; Verhoff, Donald H.; and Blank, Wallace J., 4,195,856, Cl. 280-81.00R.

Blanzy, Eugene J., to Lincoln Brass Works, Inc. Burner structure and method of manufacture. 4,195,785, Cl. 239-566.000.

Blattner, Raymond J., to Dresser Industries, Inc. Indicating device for torque wrenches. 4,195,589, Cl. 116-212.000.

Blazek, William S., to TRW Inc. Method of forming an airfoil with inner and outer shroud sections. 4,195,396, Cl. 29-156.80H.

Blazek, William S., to TRW Inc. Method of forming metal article having plurality of airfoils extending outwardly from a hub. 4,195,683, Cl. 164-10.000.

Blendax-Werke R. Schneider: *See*—
Raaf, Helmut; and Wagner, Helmar R., 4,196,189, Cl. 424-37.000.

Bletz, Walter: *See*—
Holle, Werner; and Bletz, Walter, 4,195,909, Cl. 350-162.00R.

Blumthal, William M.: *See*—
Reick, Kenneth R.; Blumthal, William M.; and Hurwitz, Harold S., 4,195,591, Cl. 118-655.000.

Boberski, William G.: *See*—
Jones, James E.; Temple, Rodger G.; Seiner, Jerome A.; Young, Sharon L.; and Boberski, William G., 4,196,107, Cl. 260-17.00R.

BOC Limited: *See*—
Garrett, Michael E.; and Smith, Kenneth C., 4,196,074, Cl. 210-3.000.

Boddele, Dominique: *See*—
Patrie, Jos; Lefebvre, Jacques; and Boddele, Dominique, 4,196,060, Cl. 204-28.000.

Boehme, Helen J., legal representative: *See*—
Murphy, Clarence R.; Thackaberry, S. Paul; Boehme, Robert E., deceased; and Boehme, Helen J., legal representative, 4,196,305, Cl. 568-758.000.

Boehme, Robert E., deceased: *See*—
Murphy, Clarence R.; Thackaberry, S. Paul; Boehme, Robert E., deceased; and Boehme, Helen J., legal representative, 4,196,305, Cl. 568-758.000.

Boelle, Jean-Paul; Koulbanis, Constantin; and Zabotto, Arlette, to L'Oreal. Non-irritating eye make-up remover composition. 4,196,201, Cl. 424-180.000.

Bogart, Eldred, to Caterpillar Tractor Co. Brazing of powdered metal parts. 4,195,764, Cl. 228-208.000.

Bogner, Max; and Grun, Larry. Annular jewelry article. 4,195,493, Cl. 63-15.000.

Bogoch, Samuel. Method for diagnosing malignant gliol brain tumors. 4,196,186, Cl. 424-12.000.

Boner, John O.; Lasiter, David N.; and Wilson, Joseph H. Apparatus for transporting medications or the like. 4,195,734, Cl. 206-558.000.

Borg-Warner Corporation: *See*—
Clauss, Julius A.; Ivey, John S.; and Smirl, Richard L., 4,195,536, Cl. 74-759.000.

Bortkevicius, Jonas: *See*—
Bardsley, Robert F.; Bortkevicius, Jonas; and Schoonmaker, Charles D., 4,195,559, Cl. 99-353.000.

Borton, Roland K.: *See*—
Noddings, John; and Borton, Roland K., 4,196,466, Cl. 361-239.000.

Bos, Andre, to Technal International S.A. Apparatus for slotting metal shapes. 4,195,760, Cl. 225-103.000.

Bosiacki, Richard J.: *See*—
Livings, Rodney; and Bosiacki, Richard J., 4,195,415, Cl. 34-48.000.

Bosik, Barry S., to Bell Telephone Laboratories, Incorporated. Loop-back test system. 4,196,321, Cl. 179-175.20R.

Bossut, Achille, to J. Brochier Soieries. Apparatus for use in a weaving process. 4,195,671, Cl. 139-455.000.

Bougon, Pierre P. A.; Parmentier, Alain R. A.; and Weiss, Pierre M., to Le Materiel Telephonique. Panoramic image generating system. 4,195,911, Cl. 350-171.000.

Boutmy, Patrick E.; Stutzmann, Michel; and Walraet, Jean G., to Societe Anonyme de Telecommunications. Digital multiplexing and demultiplexing system. 4,196,315, Cl. 370-102.000.

Bouvaist, Jean; and Ferton, Daniel, to Cegedur Societe de Transformation de l'Aluminium Pechiney. Process for the thermal treatment of aluminum alloy sheets. 4,196,021, Cl. 148-2.000.

Bowler, Edward F., Jr.: *See*—
Eddy, Clifford O.; Safford, George J.; and Bowler, Edward F., Jr., 4,196,256, Cl. 428-422.000.

Bowmar Instrument Corporation: *See*—
Herr, Robert W.; and Sigl, Edward D., 4,195,768, Cl. 235-103.000.

Boxer, Trevor C., to Lucas Industries Limited. Control circuits for electric traction motors for vehicles. 4,196,377, Cl. 318-269.000.

Bradley, Hubert, Jr.; Bayless, Robert G.; Hart, Ronald L.; and Davis, Danny A., to Celanese Corporation. Tobacco-substitute smoking material. 4,195,645, Cl. 131-2.000.

Bradley, Thomas L.: *See*—
Lawrence, Ernest R.; and Bradley, Thomas L., 4,195,467, Cl. 56-296.000.

Brailsford, Gerold W. Method of mixing mortar. 4,195,933, Cl. 366-2.000.

Brandt, Inc.: *See*—
Bergman, Charles T.; and Zwieg, Robert L., 4,195,463, Cl. 53-52.000.

Bratt, Jan C.; and Moodysson, Bengt-Ove M., to Kommanditbolaget United Stirling (Sweden) AB & Co. Double-acting four-cylinder hot gas engine. 4,195,613, Cl. 123-192.00B.

Brauer, Dale P.: *See*—
Caveney, Jack E.; Brauer, Dale P.; Cesaro, William G.; and Bulanda, John J., 4,195,902, Cl. 339-258.00S.

Braun Aktiengesellschaft: *See*—
Gaus, Harry; Milutziki, Udo; and Schotte, Dietwald, 4,195,846, Cl. 274-15.00R.
Ullmann, Roland; Schweingruber, Otto; and Oprach, Klaus, 4,195,650, Cl. 132-83.00R.

Brennan, James J.: *See*—
Spetgang, Irwin; and Brennan, James J., 4,196,457, Cl. 360-129.000.

Bresson, Clarence R., to Phillips Petroleum Company. Blends of different conjugated diene/monovinyl aromatic copolymers in bituminous based roofing and waterproofing membranes. 4,196,115, Cl. 260-28.50B.

Bridgestone Tire Company Limited: *See*—
Haraguchi, Yoshifumi; Fukuyama, Hiroshi; and Kamiguchi, Shu, 4,195,413, Cl. 33-169.00B.

Brinkerhoff, VerDon C. Distillation/absorption engine. 4,195,485, Cl. 60-649.000.

Brinkman, Willem, to Holec, N.V. Device for supplying fuel to a combustion engine and method of manufacturing said device. 4,195,609, Cl. 123-139.00E.

British Gas Corporation: *See*—
Anderson, John A., 4,195,978, Cl. 48-62.00R.

Brobeck, Helmut, to Aktiengesellschaft Kuhnle, Kopp & Kausch. Operative members for use in a quick shut-off apparatus. 4,195,533, Cl. 74-3.200.

Brois, Stanley J.: *See*—
Ryer, Jack; Zielinski, James; Miller, Harold N.; and Brois, Stanley J., 4,195,976, Cl. 44-63.000.

Brooke Bond Vending Systems Limited: *See*—
Smith, David B., 4,195,751, Cl. 221-17.000.

Brooke, Edric R., to Xerox Corporation. Copying machine with constant length scanning beam. 4,196,455, Cl. 358-296.000.

Brotzmann, Karl, to Eisenwerk-Gesellschaft Maximilianshutte mbH. Method of improvement of the heat-balance in the refining of steel. 4,195,985, Cl. 75-60.000.

Brotzmann, Karl; and Mantey, Paul G., to Eisenwerk-Gesellschaft Maximilianshutte mbH. Process for increasing the life of the refractory masonry of metallurgical vessels. 4,196,159, Cl. 264-29.100.

Broucksou, Robert H., to Eaton Corporation. Positioning device for a vehicle steering column. 4,195,535, Cl. 74-493.000.

Brown-Bridge Mills, Inc., The: *See*—
Gallagher, Nicholas D.; and Gibbs, Richard L., 4,195,556, Cl. 93-58.0ST.

Brown, Charles B., to United States of America, Navy. Doppler frequency proximity fuze. 4,196,433, Cl. 343-6.00R.

Brown, Ivan R., to Hardinge Brothers, Inc. Machine tool feed screw assembly. 4,195,538, Cl. 82-27.000.

Brown, Jasper H.; and Wang, Donald S. T., to Monsanto Company. Hydrolysis-resistant flexible polyurethane foams. 4,196,268, Cl. 521-130.000.

Brown, Kenneth R., to Ferranti Limited. Analog to digital converter. 4,196,419, Cl. 340-347.0AD.

Brown, Lee R.; Jose, L. Herrera; and Plumadore, John D., to James River Graphics Inc. Electrographic recording method of applying an electric field opposite the charge retaining layer. 4,195,991, Cl. 430-55.000.

Brunn, Erwin, to Ciba-Geigy Corporation. Process for the manufacture of basic oxazine dyestuffs. 4,196,286, Cl. 544-103.000.

Brunswick Corporation: *See*—
Russell, Jack A.; Pratt, Goodrich B.; and Gretzky, Anthony J., 4,195,920, Cl. 353-26.00A.
Stiner, Roy E., 4,195,793, Cl. 242-84.20R.

Bryzek, Janusz, to Predsiqbiorstwo Auttomatyki Przemyslowej "Mera-Pnefal". Physical quantities electric transducers temperature compensation circuit. 4,196,382, Cl. 323-75.00A.

BSR Limited: *See*—
Hares, Barrington, 4,195,848, Cl. 274-10.00S.

Buchanan, William E.; and Kiley, Eugene F., to Johns Hopkins University, The. Information display method and apparatus for air traffic control. 4,196,474, Cl. 364-461.000.

Buck, Robert T.: *See*—
Amos, Lynn G.; and Buck, Robert T., 4,195,526, Cl. 73-425.600.

Buckeye Cellulos Corporation: *See*—
Kitson, Richard P.; Gilbert, Richard L., Jr.; and Israel, Joseph, 4,196,245, Cl. 428-198.000.

Budd, Joe A., to Budd-Ke Enterprises, Inc. Apparatus for reeling and unreeling pool covers. 4,195,370, Cl. 4-172.140.

Budd-Ke Enterprises, Inc.: *See*—
Budd, Joe A., 4,195,370, Cl. 4-172.140.

Budmiger, Hermann, to Laspo AG. System for simulating weapon firing. 4,195,422, Cl. 35-25.000.

Budraitis, Tadas; and Seliga, Gerald W., to Productronix, Inc. Sensor for reciprocating press. 4,195,563, Cl. 100-99.000.

Buisman, Karel L.: *See*—
van Haren, Johannes G.; and Buisman, Karel L., 4,195,855, Cl. 277-166.000.
Bukowski, Mark F.: *See*—
Bukowski, Michelene F., 4,195,625, Cl. 128-62.00A.
Bukowski, Michelene F., to Bukowski, Mark F. Gum cleaning implement. 4,195,625, Cl. 128-62.00A.
Bulanda, John J.: *See*—
Caveney, Jack E.; Brauer, Dale P.; Cesaro, William G.; and Bulanda, John J., 4,195,902, Cl. 339-258.00S.
Bulla, Beatrice. Can creels for feeding fibre slivers to textile machines. 4,195,388, Cl. 19-157.000.
Bullock, Jack C.; and Kelly, Benjamin E., to United States of America, Energy. Surge-damping vacuum valve. 4,195,664, Cl. 137-613.000.
Bunes, Leonard A., to Dynapol. Orange anthrapyridine monomeric colorants and colorant precursors. 4,196,294, Cl. 546-76.000.
Bunker Ramo Corporation: *See*—
Chow, Weichien; and Keglewitsch, Josef, 4,195,898, Cl. 339-99.00R.
Radloff, Frederick J.; and Krolak, Ronald F., 4,195,899, Cl. 339-103.00M.
Stupay, Lawrence J., 4,195,893, Cl. 339-14.00R.
Burke, Howard J.: *See*—
Bader, Fredric G.; and Burke, Howard J., 4,196,132, Cl. 260-396.00R.
Burke Industries, Inc.: *See*—
Ruddell, Adrian, 4,195,887, Cl. 305-42.000.
Burkert GmbH: *See*—
Gottel, Otto, 4,195,662, Cl. 137-554.000.
Burns, David C.; Shum, Lanson Y.; Reyes, Renato D.; Jacobs, Arthur F.; Morris, Duane W.; and Castner, Raymond P., to Westinghouse Electric Corp. Segmented articulating manipulator arm for nuclear reactor vessel inspection apparatus. 4,196,049, Cl. 176-19.00R.
Burns Foods Limited of Calgary, Alberta Canada: *See*—
Cheney, Earl J., 4,196,222, Cl. 426-264.000.
Burr Oak Tool & Gauge Company: *See*—
Franks, Lawrence A., 4,195,540, Cl. 83-95.000.
Burroughs Corporation: *See*—
Benton, Michael K.; and Sangani, Suresh H., 4,195,770, Cl. 371-21.000.
Sprenkle, George J., 4,195,400, Cl. 29-753.000.
Burroughs Wellcome Co.: *See*—
Almeida, June D.; and Edwards, David C., 4,196,191, Cl. 424-89.000.
Burton, Larry W.: *See*—
Joines, William T.; Burton, Larry W.; Rafal, Marc D.; and Spock, Alexander, 4,195,641, Cl. 128-632.000.
Burton, Lawrence; and Friedman, Frank, to Immunology Research Foundation, Inc. Blocking protein fractions, recovery methods and products. 4,196,121, Cl. 260-112.00B.
Burton, Stanley J., to Fisco Products Limited. Nail dispensing nozzle assembly. 4,195,762, Cl. 227-156.000.
Busby, David E.: *See*—
Scheifley, John C.; Shields, Clark R.; and Busby, David E., 4,195,596, Cl. 122-149.000.
Busch, Heinz; and Schroder, Peter, to Messerschmitt-Boelkow-Blohm GmbH. Device for extinguishing fires from the air. 4,195,693, Cl. 169-53.000.
Buschor, Karl, to Gema AG Apparatebau. Electrostatic power coating gun. 4,196,465, Cl. 361-228.000.
Butler, Jack F.; and Nill, Kenneth W., to Laser Analytics, Inc. Higher power semiconductor radiating mirror laser. 4,196,402, Cl. 331-94.50C.
Butler Manufacturing Company: *See*—
Martin, James W.; and Hardwick, John R., 4,195,586, Cl. 113-54.00R.
Butner, Karl; Hehnen, Josef; and Rudiger, Reiner, to Texas Instruments Deutschland GmbH. Encapsulated power semiconductor device with single piece heat sink mounting plate. 4,196,444, Cl. 357-81.000.
Byers Photo Equipment Co., Inc.: *See*—
Houck, Stephen R., 4,196,040, Cl. 156-584.000.
C.A.H., Inc.: *See*—
Han, Paul S., 4,196,343, Cl. 219-364.000.
Cabot Corporation: *See*—
Dannenberg, Eli M.; and Williams, Frank R., 4,196,013, Cl. 106-281.00R.
Herchenroeder, Robert B. H., 4,195,987, Cl. 75-122.000.
Cala, Francis R.; and Winston, Anthony E., to Church & Dwight Co. Inc. Dry blending using magnesium stearate. 4,196,095, Cl. 252-140.000.
Caldwell, Robert J.: *See*—
Cycowicz, Izchak; and Caldwell, Robert J., 4,195,878, Cl. 297-83.000.
California Institute of Technology: *See*—
Rhein, Robert A.; and Ingham, John D., 4,196,129, Cl. 260-346.300.
California Medical Developments, Inc.: *See*—
Olsen, C. Eric, 4,196,167, Cl. 422-61.000.
Calspan Corporation: *See*—
Ludwig, Gary R.; and Arendt, Rudy H., 4,196,472, Cl. 364-431.000.
Campbell, S. Jack, to Riviana Foods, Inc. Aerosol container cap and actuator. 4,195,756, Cl. 222-182.000.
Canadian Industries Limited: *See*—
Gannon, David J., 4,196,073, Cl. 209-167.000.
Canadian Patents and Development Limited: *See*—
MacKay B, Alejandro; Tinga, Wayne R.; and Voss, Walter A. G., 4,196,332, Cl. 219-10.55B.
Cannon, Charles C. Work chair for aerial lift. 4,195,708, Cl. 182-2.000.
Capital Steel & Supply Co., a Division of Jensen Investment Corp.: *See*—
Hickman, John S.; and Jensen, Andrew P., 4,195,456, Cl. 52-208.000.
Cardamone, Tom, to Keyline Research & Development Corp. Packaging systems. 4,195,728, Cl. 206-45.330.
Carl Kurt Walther GmbH & Co. KG: *See*—
Walther, Carl K.; Walther, Henning D.; Hageluken, Hubert P.; and Temme, Karl, 4,195,447, Cl. 51-163.200.
Carlson, David E., to RCA Corporation. Article and device having an amorphous silicon containing a halogen and method of fabrication. 4,196,438, Cl. 357-15.000.
Carpenter Technology Corporation: *See*—
Frantz, Earl L., 4,196,261, Cl. 428-616.000.
Carrier Drysys Limited: *See*—
Rowe, Arthur J., 4,196,023, Cl. 148-6.15R.
Carrish, Jeffrey J.: *See*—
Fotland, Richard A.; and Carrish, Jeffrey J., 4,195,927, Cl. 355-3.0TE.
Carroll, D.: *See*—
Costantino, G.; and Carroll, D., 4,195,798, Cl. 244-1.0TD.
Carver, Donald W.; and Whittaker, Jerry W., to United States of America, Energy. Acoustic emission intrusion detector. 4,196,423, Cl. 340-566.000.
Cason, Charles M., III; and Dezenberg, George J., to United States of America, Army. Repetitively pulsed, cold cathode e-beam, self-switch laser. 4,196,399, Cl. 331-94.50G.
Castanis, George. Yogurt maker. 4,195,561, Cl. 99-455.000.
Castiglia, Ignatius F. Lower torso support appliance. 4,195,640, Cl. 128-579.00R.
Castner, Raymond P.: *See*—
Burns, David C.; Shum, Lanson Y.; Reyes, Renato D.; Jacobs, Arthur F.; Morris, Duane W.; and Castner, Raymond P., 4,196,049, Cl. 176-19.00R.
Castrol South Africa (Proprietary) Limited: *See*—
Bartlett, Thomas G. E., 4,195,711, Cl. 184-55.00A.
Caterpillar Tractor Co.: *See*—
Bogart, Eldred, 4,195,764, Cl. 228-208.000.
Cemenska, Richard A., 4,196,170, Cl. 422-171.000.
Dezelan, Joseph E., 4,195,479, Cl. 60-420.000.
Hoehn, Randall J., 4,195,995, Cl. 430-142.000.
Kinney, Lionel L., 4,195,494, Cl. 64-9.00R.
Roley, Robert D.; and Sturges, James R., 4,195,852, Cl. 277-92.000.
Shelby, Robert L.; and Behrends, Bertwin E., 4,195,480, Cl. 60-486.000.
Taft, Morris E., 4,195,849, Cl. 277-12.000.
Wirt, Leon A., 4,195,716, Cl. 192-3.00R.
Cats, Willem J.: *See*—
Huisman, Hendrikus F.; and Cats, Willem J., 4,196,258, Cl. 428-447.000.
Cavazza, Claudio. Device for containing a substance to be mixed with another substance in a vial. 4,195,731, Cl. 206-222.000.
Caveney, Jack E.; Brauer, Dale P.; Cesaro, William G.; and Bulanda, John J., to Panduit Corp. Electrical connector having an extensible, collapsible insulative sleeve. 4,195,902, Cl. 339-258.00S.
Cayton, Robert J.: *See*—
Hyman, David L.; Cayton, Robert J.; and Rosenquist, Kurt E., 4,195,680, Cl. 160-166.00A.
Cazier, Verl O.: *See*—
Anderson, Kenneth W.; Summerhays, Brent; and Cazier, Verl O., 4,195,522, Cl. 73-229.000.
Cegedur Societe de Transformation de l'Aluminium Pechiney: *See*—
Bouvaist, Jean; and Ferton, Daniel, 4,196,021, Cl. 148-2.000.
Celanese Corporation: *See*—
Bradley, Hubert, Jr.; Bayless, Robert G.; Hart, Ronald L.; and Davis, Danny A., 4,195,645, Cl. 131-2.000.
Cella, James A., to General Electric Company. Dicarbonyl chelate salts. 4,196,138, Cl. 260-440.000.
Cemenska, Richard A., to Caterpillar Tractor Co. Multistage catalytic reactor having a pressure responsive gas flow control valve therein. 4,196,170, Cl. 422-171.000.
Central Glass Co.: *See*—
Chiba, Kenji, 4,196,038, Cl. 156-433.000.
Cesaro, William G.: *See*—
Caveney, Jack E.; Brauer, Dale P.; Cesaro, William G.; and Bulanda, John J., 4,195,902, Cl. 339-258.00S.
Cessou, Maurice, to Institut Francais du Petrole. Method and apparatus for recovering products of low pumpability. 4,195,653, Cl. 137-206.000.
Chailloux, Pierre, to Touillet, Marielle. Household apparatus for the roasting of coffee in small quantities. 4,196,342, Cl. 219-385.000.
Chalmers, Alexander A.; and Gailey, J. Lynn, to Alcan Aluminum Corporation. Adjustable soffit system. 4,195,455, Cl. 52-94.000.
Champion International Corporation: *See*—
Roccaforte, Harry I.; Hanko, Jimmy; and Schillinger, Joseph F., 4,195,765, Cl. 229-52.00B.
Chang, Harry L., to Cities Service Company. Chemical waterflood process development. 4,195,689, Cl. 166-246.000.
Chao, Kwang C.; and Porter, Mark C., to Nuclepore Corporation. Method for forming microporous fluorocarbon polymer sheet and product. 4,196,070, Cl. 204-266.000.
Chapman, Derek D., to Eastman Kodak Company. Photographic products and processes employing nondiffusible 6-arylazo-2-amino-3-pyridinol dye-releasing compounds and precursors thereof. 4,195,994, Cl. 430-224.000.

Chartglen, Ltd.: *See*—
Geary, Michael L., 4,196,461, Cl. 362-259.000.

Chase, William L., to International Drum Corporation. Method for folding a polygonal container. 4,195,555, Cl. 93-36.800.

Chastanier, Roger A. H., to Le Metais, Claude, a part interest. Winch for handling an elevating dome shaped member of a building having a device enabling the instantaneous unlocking of the winch. 4,195,819, Cl. 254-186.00R.

Chattha, Mohinder S., to Ford Motor Company. High solids coating composition adapted for use as automotive topcoat-5. 4,196,270, Cl. 525-110.000.

Chea, Francisco, to United States of America, Navy. Remote position plotter. 4,196,473, Cl. 364-449.000.

Check, John M.; and Rupert, Gary F., to Raycon Corporation. Two-point contact steady rest follower. 4,195,448, Cl. 51-165.770.

Chem Par Corporation: *See*—
Kang, Pierson S., 4,195,557, Cl. 93-59.00R.

Chemplex Company: *See*—
Hwang, Yu-Tang, 4,196,098, Cl. 252-430.000.

Chemray Corporation: *See*—
Satee, Raichur, 4,196,061, Cl. 204-33.000.

Cheney, Earl J., to Burns Foods Limited of Calgary, Alberta Canada. Process for the preparation of meat and bacon analogues. 4,196,222, Cl. 426-264.000.

Chevron Research Company: *See*—
Jensen, Harbo P., 4,196,175, Cl. 423-242.000.
Lilburn, Jennifer E., 4,196,090, Cl. 252-49.900.
Magee, Philip S., 4,196,152, Cl. 260-609.00E.

Chiba, Kenji, to Central Glass Co. Device for embedding a metallic antenna wire in plastic sheet. 4,196,038, Cl. 156-433.000.

Chihara, Hiroyuki, to Kabushiki Kaisha Suwa Seikosha. Improved AC driving mode and circuit for an electro-optical display. 4,196,432, Cl. 340-784.000.

Child, Frank W., to Child Laboratories Inc. Dental implant. 4,195,409, Cl. 433-175.000.

Child Laboratories Inc.: *See*—
Child, Frank W., 4,195,409, Cl. 433-175.000.

Chilton, George E.; and Kudla, John, to Codi Corporation. Diffusion boat and grip. 4,195,871, Cl. 294-16.000.

Chiu, Herman S.; and Smith, George E., to Union Carbide Corporation. Smoke colored food casing and method of producing same by use of liquid smoke and an albumin. 4,196,220, Cl. 426-105.000.

Chiyoda Chemical Engineering & Construction Co., Ltd.: *See*—
Inooka, Masayoshi; Wakabayashi, Motoyoshi; Matsuda, Masatoshi; Kasuya, Masaaki; Ohguchi, Yoshihoro; Nakamura, Munekazu; and Morimoto, Tatsuo, 4,196,102, Cl. 252-457.000.
Takahashi, Hisao; Nomura, Takeshi; Ohara, Yoshitomo; Nakanishi, Hajime; Miwa, Naotaka; Kawabe, Naoshi; Endo, Tomizo; Hozuma, Hiroshi; and Akimoto, Minoru, 4,196,050, Cl. 196-122.000.

Chloride Group Limited: *See*—
Gurwicz, David, 4,196,469, Cl. 363-131.000.

Cho, Nakwon, to United States of America, Energy. Valve. 4,195,813, Cl. 251-203.000.

Chow, Weichien; and Keglewitsch, Josef, to Bunker Ramo Corporation. Patchcord connector. 4,195,898, Cl. 339-99.00R.

Christensen, Burton G.; and Shih, David H., to Merck & Co., Inc. 6-(α-Hydroxyethyl)-7-oxo-1-azabicyclo[3.2.0]hept-2-ene-2-carboxylic acid and derivatives thereof. 4,196,211, Cl. 424-274.000.

Christianson, Earl E. Storage container for meat. 4,195,744, Cl. 220-1.500.

Christidis, Yani: *See*—
Vallejos, Jean Claude; and Christidis, Yani, 4,196,299, Cl. 549-79.000.

Chrysler Corporation: *See*—
Graham, Kenneth A., 4,195,971, Cl. 417-366.000.

Chubb & Son's Lock and Safe Company Limited: *See*—
Hadley, John, 4,196,347, Cl. 455-603.000.

Church & Dwight Co. Inc.: *See*—
Cala, Francis R.; and Winston, Anthony E., 4,196,095, Cl. 252-140.000.

Ciba-Geigy Corporation: *See*—
Abeler, Gerd; and Schneider, Rainer, 4,196,110, Cl. 260-23.0XA.
Bitzer, Diethelm; and Lohmann, Dieter, 4,196,233, Cl. 427-249.000.
Brunn, Erwin, 4,196,286, Cl. 544-103.000.
Darms, Roland, 4,196,144, Cl. 260-571.000.
Evans, Samuel, 4,196,119, Cl. 260-45.95C.
Nachbur, Hermann, 4,196,260, Cl. 428-526.000.
Spivack, John D., 4,196,117, Cl. 260-45.7PH.
Spivack, John D.; and Dexter, Martin, 4,196,301, Cl. 560-75.000.
Wirth, Hermann O.; Wehner, Hermann W.; and Otto, Eberhard, 4,196,137, Cl. 260-429.700.

Cities Service Company: *See*—
Chang, Harry L., 4,195,689, Cl. 166-246.000.

Citizen Watch Co., Ltd.: *See*—
Ebihara, Heihachiro, 4,196,404, Cl. 331-116.0FE.

Claassen, Volkert: *See*—
Van Dijk, Jan; Claassen, Volkert; and Zwagemakers, Johannes M. A., 4,196,216, Cl. 424-309.000.

Clairol Incorporated: *See*—
Halasz, Alexander; and Cohen, David, 4,196,145, Cl. 260-573.000.

Clarke, David E.; Davies, James F.; Tune, John B.; and Wilde, Raymond J., to Lever Brothers Company. Production of detergent compositions. 4,196,093, Cl. 252-99.000.

Clarke-Gravely Corporation: *See*—
Whitney, Robert P., 4,195,969, Cl. 417-247.000.

Clauss, Julius A.; Ivey, John S.; and Smirl, Richard L., to Borg-Warner Corporation. Planetary transmission. 4,195,536, Cl. 74-759.000.

Clay, Robert B.: *See*—
Cook, Merrill A.; and Clay, Robert B., 4,195,548, Cl. 86-1.00R.

Clayton, John P., to Beecham Group Limited. Treatment of infections. 4,196,214, Cl. 424-283.000.

Claywell, James R. Double flush valve assembly. 4,195,373, Cl. 4-326.000.

Clemmens, Albert J.: *See*—
Replogle, John A.; Clemmens, Albert J.; and Bell, Edward D., 4,195,519, Cl. 73-215.000.

CMI Corporation: *See*—
Swisher, George W., Jr., 4,195,946, Cl. 404-75.000.

Coates, David; Gray, George W.; and McDonnell, Damien G., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Liquid crystal compounds. 4,195,916, Cl. 350-346.000.

Coburn, Robert E., to Molins Machine Company, Inc. Web diverter. 4,195,539, Cl. 83-44.000.

Codi Corporation: *See*—
Chilton, George E.; and Kudla, John, 4,195,871, Cl. 294-16.000.

Cohen, David: *See*—
Halasz, Alexander; and Cohen, David, 4,196,145, Cl. 260-573.000.

Cohen, Martin J., to Franklin GNO Corporation. Methods of monitoring the presence or movements of humans. 4,195,513, Cl. 73-23.000.

Cole, George A. Rotating security hinge. 4,195,385, Cl. 16-171.000.

Coleman, Marvin W. Golf club and process for making same. 4,195,842, Cl. 273-171.000.

Coley, Ralph J., to Firestone Tire & Rubber Company, The. Additive injection valve. 4,195,654, Cl. 137-238.000.

Colgate-Palmolive Company: *See*—
Richter, Virgil J., 4,196,103, Cl. 252-541.000.

Collins, Lars T., to Lars Collin Consult AB. Analyzing exhaust gases of vehicle internal combustion engines. 4,195,514, Cl. 73-116.000.

Collu, Carlo: *See*—
Ligorati, Ferdinando; Invernizzi, Renzo; Collu, Carlo; and Fontanesi, Maurizio, 4,196,097, Cl. 252-429.00C.

Columbia Machine, Inc.: *See*—
Schmitt, Robert A., 4,195,959, Cl. 414-35.000.

Combe Incorporated: *See*—
Lapidus, Herbert, 4,195,972, Cl. 8-10.100.

Commissariat a l'Energie Atomique: *See*—
Gaussens, Gilbert; and Lemaire, Francis, 4,196,065, Cl. 204-159.170.

Communications Satellite Corporation: *See*—
Standing, Arthur F., 4,196,381, Cl. 323-23.000.

Compagnie Industrielle des Telecommunications Cit-Alcatel: *See*—
Le Dily, Claude, deceased; Le Dily, legal representative, by Josephine; and Faye, Jean-Claude, 4,196,405, Cl. 333-16.000.

Connery, Ruth: *See*—
Connery, Thomas J., deceased; and Connery, Ruth, executrix, 4,195,630, Cl. 128-159.000.

Connery, Ruth, executrix: *See*—
Connery, Thomas J., deceased; and Connery, Ruth, executrix, 4,195,630, Cl. 128-159.000.

Connery, Thomas J., deceased; and by Connery, Ruth, executrix, to Koko, Patricia Connery; Koko, Marie H.; and Connery, Ruth. Men's undergarments. 4,195,630, Cl. 128-159.000.

Connie Lee Hosiery Mills, Inc.: *See*—
Goldstein, Ralph; and Swanson, Ralph S., 4,195,497, Cl. 66-185.000.

Conoco, Inc.: *See*—
Harms, Robert L.; and Hutchison, Merle, 4,196,064, Cl. 204-147.000.

Conover, John C.; and Kendall, Larry J., to Fairchild Camera & Instrument Corporation. Analog multiplexer. 4,196,358, Cl. 307-243.000.

Cook, Lacy G.: *See*—
Lichty, William R.; Ferrer, John J.; Cook, Lacy G.; and Ernstoff, Michael N., 4,195,915, Cl. 350-345.000.

Cook, Merrill A.; and Clay, Robert B. Blasting slurry pump truck. 4,195,548, Cl. 86-1.00R.

Cooper, Glenn D.: *See*—
Bennett, James G., Jr.; and Cooper, Glenn D., 4,196,278, Cl. 528-215.000.
Haaf, William R.; and Cooper, Glenn D., 4,196,116, Cl. 260-42.180.

Cooper Industries, Inc.: *See*—
Galloup, Clifford L., 4,195,401, Cl. 29-764.000.

Cordeiro, August V., to Electric Terminal Corporation. Fluid-operated press. 4,195,565, Cl. 100-266.000.

Cornelius, George W. Pitch control system for helicopter rotor blades. 4,195,966, Cl. 416-18.000.

Corning Glass Works: *See*—
Amos, Lynn G.; and Buck, Robert T., 4,195,526, Cl. 73-425.600.

Corrado, Anthony P.; Marchese, Vincent P.; Morici, Frank S.; and Timte, Frank W., to EMX Controls Inc. Electronic valve control means. 4,195,811, Cl. 251-30.000.

Corral Martinez, Cecilio, to Montoro Munoz, Francisco. Construction of friction clutches. 4,195,719, Cl. 192-89.00B.

Costantino, G.; and Carroll, D., to United States of America, Navy. Universal tow target adapter. 4,195,798, Cl. 244-1.0TD.

Cote, Rolland R. Window pane locking device for louvered window structures. 4,195,444, Cl. 49-403.000.

Cottrell, Douglas J. Food container. 4,195,746, Cl. 220-4.00E.

Coucoulas, Alexander; and Nis, John R., to Western Electric Company, Incorporated. Method for extruding articles. 4,195,982, Cl. 65-134.000.

Coury, Francis J.: *See—*
DiSalvo, Walter A.; Cubitt, Robert B.; and Coury, Francis J., 4,195,634, Cl. 128-290.00R.
Cowles Tool Company: *See—*
Zimmer, Roy J., 4,195,542, Cl. 83-664.000.
Coy, Gerald R.: *See—*
Ross, Benjamin J.; Toth, James M.; Abramczyk, Richard F.; and Coy, Gerald R., 4,195,530, Cl. 73-638.000.
Coyne, Robert P. Camper box. 4,195,889, Cl. 312-240.000.
Cragoe, Edward J., Jr.: *See—*
Woltersdorf, Otto W., Jr.; deSolms, Susan J.; and Cragoe, Edward J., Jr., 4,196,292, Cl. 544-407.000.
Cramer, Robert L., to Bendix Corporation, The. Oxygen regulator. 4,195,817, Cl. 251-340.000.
Craven, Jack L.; Marjoram, Ernest B.; Sandeffer, H. Dale; and Stewart, Charles J. System for producing photographs. 4,195,923, Cl. 354-91.000.
Crawford, Lynn D.: *See—*
Watts, Paul J.; Crawford, Lynn D.; and Nichols, Philip T., 4,195,651, Cl. 135-2.000.
Crawley, Lantz S.: *See—*
Fanshawe, William J.; Epstein, Joseph W.; Crawley, Lantz S.; Hofmann, Corris M.; and Safir, Sidney R., 4,196,120, Cl. 260-456.00P.
Crean, Peter A.: *See—*
Warren, W. Thomas; and Crean, Peter A., 4,196,452, Cl. 358-283.000.
Cremer, Heinz P.: *See—*
Muhr, Dieter; and Cremer, Heinz P., 4,195,884, Cl. 297-362.000.
Crise, George W. Controlled compression internal combustion engine having fluid pressure extensible connecting rod. 4,195,601, Cl. 123-78.00E.
Croce, Carlo M.: *See—*
Koprowski, Hilary; Gerhard, Walter U.; and Croce, Carlo M., 4,196,265, Cl. 435-2.000.
Cross, Michael. Frictional couplings. 4,195,944, Cl. 403-326.000.
Crouse-Hinds Arrow Hart Inc.: *See—*
Povilaitis, Stanley A., 4,196,325, Cl. 200-67.00A.
Crouse-Hinds Company: *See—*
Berry, Richard C., 4,195,806, Cl. 248-70.000.
Cubitt, Robert B.: *See—*
DiSalvo, Walter A.; Cubitt, Robert B.; and Coury, Francis J., 4,195,634, Cl. 128-290.00R.
Culmer, Daniel D.; and Russell, Ronald W., to National Semiconductor Corporation. Expanded analog-to-digital converter having one-half LSB shift. 4,196,420, Cl. 340-347.0AD.
Curtius, Horst: *See—*
Hertel, Hasso; Curtius, Horst; Feess, Erich; and Karacsonyi, Paul, 4,195,973, Cl. 8-46.000.
Cusimano, David W.: *See—*
Allen, Ronald E.; and Cusimano, David W., 4,196,036, Cl. 156-422.000.
Custom Cable Company: *See—*
Moore, Boyd B.; and Kendall, Clarence E., Jr., 4,196,307, Cl. 174-47.000.
Cutter Laboratories, Inc.: *See—*
Parker, Wendell R.; Silverman, Mark H.; and Warner, Willis L., 4,195,632, Cl. 128-272.000.
Cycowicz, Izchak; and Caldwell, Robert J., to Mohasco Corporation. Reclining chair. 4,195,878, Cl. 297-83.000.
D. Duesterloh GmbH: *See—*
Klie, Jurgen, 4,195,553, Cl. 91-497.000.
Dai-Ich Kogyo Seiyaku Co., Ltd.: *See—*
Hamuro, Yasumasa; Naka, Akihiro; and Honjo, Shuichi, 4,195,975, Cl. 44-51.000.
Dai Nippon Insatsu Kabushiki Kaisha: *See—*
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Daigle, Donald J.: *See—*
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Daihachi Chemical Industry Co., Ltd.: *See—*
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Daiichi Koshuha Kogyo Kabushiki Kaisha: *See—*
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Daikin Kogyo Co., Ltd.: *See—*
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Daikoku, Takahiro: *See—*
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Dale, Frank L.; and Dale, Leitzel S. Ornithopter construction. 4,195,438, Cl. 46-74.00R.
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Dale, Frank L.; and Dale, Leitzel S., 4,195,438, Cl. 46-74.00R.
D'Alessandro, A. F.: *See—*
Hunter, James B.; McGuire, George; D'Alessandro, A. F.; and Lawlor, Larry L., 4,196,099, Cl. 252-437.000.
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Dannelly, Clarence C.; and Ardell, Richard E., to Eastman Kodak Company. Rumen-stable pellets. 4,196,187, Cl. 424-21.000.
Dannenberg, Eli M.; and Williams, Frank R., to Cabot Corporation. Oxidation resistant asphalt compositions. 4,196,013, Cl. 106-281.00R.
Darlington, Rex F., to Darton, Inc. Archery bow quiver mount. 4,195,616, Cl. 124-24.00R.
Darms, Roland, to Ciba-Geigy Corporation. Aromatic diamines and their use as polycondensation components for the manufacture of polyamide, polyamide-imide and polyimide polymers. 4,196,144, Cl. 260-571.000.
Darton, Inc.: *See—*
Darlington, Rex F., 4,195,616, Cl. 124-24.00R.
da Silva, Edouard F.: *See—*
Delhaye, Michel M.; Dhamelincourt, Paul A.; and da Silva, Edouard F., 4,195,930, Cl. 356-301.000.
Daswick, Alexander C.; and Landry, Archie C., to Daswick, Alexander C. Adjustable convertible furniture for supporting one or more persons. 4,195,882, Cl. 297-242.000.
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Miller, Armin; and Maginness, Maxwell G., 4,196,450, Cl. 358-256.000.
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Davies, James F.: *See—*
Clarke, David E.; Davies, James F.; Tune, John B.; and Wilde, Raymond J., 4,196,093, Cl. 252-99.000.
Davies, Richard G., to Ford Motor Company. High strength dual-phase steel. 4,196,025, Cl. 148-36.000.
Davis, Curtis H. Motion detector. 4,196,429, Cl. 340-669.000.
Davis, Danny A.: *See—*
Bradley, Hubert, Jr.; Bayless, Robert G.; Hart, Ronald L.; and Davis, Danny A., 4,195,645, Cl. 131-2.000.
Dawes, John L.; and Devon, Thomas J., to Eastman Kodak Company. Process for regeneration of rhodium hydroformylation catalysts. 4,196.096, Cl. 252-414.000.
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Haren, Doyle V., 4,195,570, Cl. 101-348.000.
Roman, Charles A., 4,196,244, Cl. 428-159.000.
Dean, Noel S.; and Lea, Frank, to BICC Limited. Optical guides. 4,195,906, Cl. 350-96.230.
deBettencourt, Joseph T.: *See—*
Rowland, Howard J.; and deBettencourt, Joseph T., 4,196,329, Cl. 219-10.810.
Decker, Heinz; and Sohner, Gerhard, to Robert Bosch GmbH. Electronically self-controlled ignition system for internal combustion engines. 4,195,603, Cl. 123-117.00R.
Decker, Martin; Hoffmann, Herwig; Hupfer, Leopold; and Toussaint, Herbert, to BASF Aktiengesellschaft. Manufacture of N-alkylanilines. 4,196,147, Cl. 260-577.000.
Decoursey, Calvin H.; and Townsend, Todd V., to Lynch Communication Systems, Inc. PCM encoder with variable set-up intervals. 4,196,421, Cl. 340-347.0AD.
Deere & Company: *See—*
Bass, Merlyn D.; Wolf, David L.; Grimstad, Ronald N.; and Flenniken, John M., 4,195,704, Cl. 180-14.00R.
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DeGood, David A.; and Stevens, David K., to DeGood, David A. Accumulation live roller conveyor. 4,196,312, Cl. 198-781.000.
Dehmer, Mary Mae, administrator: *See—*
Bintz, Miles F.; and Dehmer, Raymond L., deceased, 4,195,474, Cl. 60-730.000.
Dehmer, Raymond L., deceased: *See—*
Bintz, Miles F.; and Dehmer, Raymond L., deceased, 4,195,474, Cl. 60-730.000.
deJong, Geert J.; and Vos, Hendrik J., to Akzo NVV. Process for removing mercury from a gas. 4,196,173, Cl. 423-210.000.
Del Bon, Franco. Closure membrane. 4,195,748, Cl. 220-258.000.
De Leo, Louis P.: *See—*
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DeLuca, Hector F.; Ikekawa, Nobuo; Tanaka, Yoko; and Kobayashi, Yoshiro, to Wisconsin Alumni Research Foundation. 24,24-Difluoro-25-hydroxycholecalciferol. 4,196,133, Cl. 260-397.200.
DEMAG, Aktiengesellschaft: *See—*
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Denis, Michel. Wheel kit for snowmobile. 4,195,702, Cl. 180-183.000.
Denko, Masatoshi, to Tokyo Shibaura Electric Co., Ltd. Roll-up method for a display unit. 4,196,430, Cl. 340-726.000.
Dennison Manufacturing Company: *See—*
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Mussoni, Frank L.; and Withrow, Gary A., 4,196,044, Cl. 162-112.000.

Denny, John L.; and Alley, Robert H., to Advance Mining Products, Inc. Method and apparatus for extending conveyor belts. 4,195,726, Cl. 198-812.000.

deSolms, Susan J.: *See*—
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Deuker, Daniel A.; and Hartwell, Paul A., to Motorola, Inc. Mechanical time delay safety and arming mechanism. 4,195,575, Cl. 102-232.000.

Deutenbach, Klaus-Rainer: *See*—
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Devon, Thomas J.: *See*—
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Dew, Denise R. Method and equipment for processing food products. 4,196,221, Cl. 426-235.000.

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Dezelan, Joseph E., to Caterpillar Tractor Co. Torque control of hydraulic motors. 4,195,479, Cl. 60-420.000.

Dezenberg, George J.: *See*—
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Dhamelincourt, Paul A.: *See*—
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Loeffler, Thomas V., 4,195,736, Cl. 209-516.000.
Siciliano, Anthony J., 4,195,592, Cl. 119-17.000.
Siciliano, Anthony J.; and Artamonoff, Serge, 4,195,594, Cl. 119-52.00B.

Dick, Heinz, to Ford Motor Company. Headlamp mounting in motor vehicle bodies. 4,196,459, Cl. 362-66.000.

Dickerson, Arthur F., to Hughes Aircraft Company. Method and apparatus for detecting faults in an electric power distribution system. 4,196,463, Cl. 361-113.000.

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Diemer, Willem H.; and Zwep, Gerrit, to U.S. Philips Corporation. X-ray tube. 4,196,367, Cl. 313-59.000.

Dierksmeier, Jorge; and Pasint, Joseph J. Resettable safety valve. 4,195,658, Cl. 137-462.000.

Digital Data, Inc.: *See*—
Forman, Aubry S.; Schultz, Charles A., Jr.; and Schultz, John F., 4,196,310, Cl. 178-22.000.

Digital Equipment Corporation: *See*—
Findeisen, Heinz H., 4,196,375, Cl. 318-6.000.

Dingwall, Andrew G. F., to RCA Corporation. Buried contact configuration for CMOS/SOS integrated circuits. 4,196,443, Cl. 357-68.000.

Dion-Biro, Guy. Fire-fighting nozzle assembly. 4,195,692, Cl. 169-25.000.

Di Salle, Enrico: *See*—
Beacco, Enzo; Bernardi, Luigi; Di Salle, Enrico; Falconi, Giovanni; and Patelli, Bianca, 4,196,288, Cl. 544-125.000.

DiSalvo, Walter A.; Cubitt, Robert B.; and Coury, Francis J., to International Playtex, Inc. Sanitary napkin with resilient stiffening means. 4,195,634, Cl. 128-290.00R.

Di Tella, Vincenzo: *See*—
Banzoli, Valeriano; Di Tella, Vincenzo; and Vielmo, Paolo, 4,195,426, Cl. 37-60.000.

Dixon, Robert M., to United States of America, Agriculture. Land imprinter. 4,195,695, Cl. 172-1.000.

Dobson Park Industries, Ltd.: *See*—
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Dr. Boy G.m.b.H.: *See*—
Spanier, Hermann, 4,195,934, Cl. 366-76.000.

Dodd, Ned T. Shackle unloading device. 4,195,386, Cl. 17-44.100.

Dodt, Jurgen: *See*—
Becker, Kunibert; Heyer, Willy; Plevak, Lubomir; and Dodt, Jurgen, 4,195,953, Cl. 405-300.000.

Doi, Yoshikazu; Sakai, Yutaka; and Ohono, Kazunori, to Fuji Photo Optical Co., Ltd. Zoom lens system. 4,195,912, Cl. 350-184.000.

Dolza, John; and Dolza, Paul B. Swimming pool cover and solar heater. 4,195,622, Cl. 126-415.000.

Dolza, Paul B.: *See*—
Dolza, John; and Dolza, Paul B., 4,195,622, Cl. 126-415.000.

Dominick, Thomas F.: *See*—
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Douglas, Donald D. Tubular sheath for facilitating the insertion of an endoscope. 4,195,624, Cl. 128-8.000.

Douglas, Jack E.; and Bigley, Richard J., to Arthur Shaw Manufacturing Ltd. Fly screens for windows. 4,195,681, Cl. 160-371.000.

Douros, John D., Jr.; and Warder, Ira T., Jr., to Gates Rubber Company, The. Method of obtaining uric acid from natural products. 4,196,290, Cl. 544-266.000.

Dourte, Dixon D.; Pierce, Richard L.; and Spawr, Walter J., to Spawr Optical Research, Inc. Optical integration with screw supports. 4,195,913, Cl. 350-292.000.

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Pawloski, Chester E., 4,196,293, Cl. 546-25.000.
Scheifley, John C.; Shields, Clark R.; and Busby, David E., 4,195,596, Cl. 122-149.000.
Strycker, Stanley J., 4,196,143, Cl. 260-567.60M.
Tung, Lu H.; and Lo, Grace Y-S, 4,196,153, Cl. 260-665.00R.
Tung, Lu H.; Lo, Grace Y-S.; and Beyer, Douglas E., 4,196,154, Cl. 260-665.00R.

Dow Corning Corporation: *See*—
Vincent, Gary A., 4,196,131, Cl. 260-347.800.

Downing, Arthur C., to General Electric Company. Steam iron water gauge. 4,195,428, Cl. 38-77.200.

Doyel, John S. Portable safe. 4,195,579, Cl. 109-52.000.

Dragerwerk Aktiengesellschaft: *See*—
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DuBois, Jean-Pierre; and Lockett, William L., to Sunbeam Corporation. Electric crepe maker. 4,195,560, Cl. 99-422.000.

DuBois, Richard; and Ashton, Donald M., Jr., to Wagner Electric Corporation. Method of forming carbon anodes in multidigit fluorescent display devices. 4,196,227, Cl. 427-67.000.

Duckstein, Stuart S. Pacifier. 4,195,638, Cl. 128-360.000.

Duda, Henry J. Exterior room for a trailer. 4,195,877, Cl. 296-172.000.

Dumont, Claude; Guillaume, Jacques; and Nedelec, Lucien, to Roussel Uclaf. Treating psychic disorders with piperidyl-indoles. 4,196,209, Cl. 424-267.000.

Dundee Cement Company: *See*—
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Dunn, Troy. Portable dog house. 4,195,593, Cl. 119-19.000.

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Graham, Boynton, 4,195,997, Cl. 430-286.000.
Kenyon, William G., 4,196,024, Cl. 148-23.000.
Knoth, Walter H., Jr., 4,196,136, Cl. 260-429.700.
Rennolds, Philip J., 4,196,042, Cl. 156-616.00R.

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Dutt, William H., to Albany International Corp. Felt having reinforced crosswise yarns. 4,196,248, Cl. 428-225.000.

Dyckerhoff & Widmann Aktiengesellschaft: *See*—
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Dyer, Clifford R. Dry chemical applicator. 4,195,753, Cl. 222-70.000.

Dynamit Nobel Aktiengesellschaft: *See*—
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E. R. Squibb & Sons, Inc.: *See*—
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Dawes, John L.; and Devon, Thomas J., 4,196,096, Cl. 252-414.000.
Johnson, William H., 4,196,000, Cl. 430-207.000.
Joseph, Douglas C.; and Hartman, Ronald L., 4,196,001, Cl. 430-502.000.
Kilminster, Kenneth N.; and Holstead, Colin, 4,195,993, Cl. 430-225.000.
Levinson, Steven R.; and Adin, Anthony, 4,196,002, Cl. 430-617.000.
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Eaton Corporation: *See*—
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Ebeling, Wilfried; Schulte, Klaus; and Kreuer, Dieter, to Bayer Aktiengesellschaft. Method of and apparatus for producing a foam-forming reaction mixture. 4,195,527, Cl. 73-434.000.

Eberhard Hoesch & Sohne GmbH & Co.: *See*—
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Ebihara, Heihachiro, to Citizen Watch Co., Ltd. Crystal oscillator having low power consumption. 4,196,404, Cl. 331-116.0FE.

Edanbob Corporation: *See*—
Wegner, John F., 4,195,429, Cl. 40-356.000.

Eddy, Clifford O.; Safford, George J.; and Bowler, Edward F., Jr., to Xerox Corporation. Long life fuser roll. 4,196,256, Cl. 428-422.000.

Edel, Hans D., to Saint-Gobain Industries. Electrically heated vehicle window. 4,196,338, Cl. 219-203.000.
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Elias, Jack; and Olen, Arthur M., to Honeywell Inc. Method and apparatus for fault-testing of electrical system monitor communication circuits. 4,195,769, Cl. 371-20.000.
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Emco Specialties, Inc.: *See—*
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Emeny, George B. Liquid level control. 4,195,968, Cl. 417-17.000.
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Emery Industries, Inc.: *See—*
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Emery, Roy W. Packing tray. 4,195,743, Cl. 217-265.000.
Emmerson, John O. Welding wire and apparatus for dispensing the same. 4,196,333, Cl. 219-60.00A.
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Engstrom, Ralph W.; and McDonie, Arthur F., to RCA Corporation. Bi-alkali telluride photocathode. 4,196,257, Cl. 428-457.000.
Enomoto, Satoru; Wada, Hisayuki; Nishita, Sadao; Mukaida, Yutaka; Yanaka, Mikiro; and Takita, Hitoshi, to Kureha Kagaku Kogyo Kabushiki Kaisha. Palladium complex. 4,196,135, Cl. 260-429.00R.
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Ethyl Corporation: *See—*
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Evans, Ross M., Jr.; and Siebold, Donald J., to General Electric Company. Electrolytic steam iron having means to minimize moisture condensation on the soleplate. 4,196,340, Cl. 219-245.000.
Evans, Samuel, to Ciba-Geigy Corporation. Novel phenol stabilizers. 4,196,119, Cl. 260-45.95C.
Exhibition Showplace Services Limited: *See—*
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Exxon Production Research Company: *See—*
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Aldridge, Clyde L.; and Bearden, Roby, Jr., 4,196,072, Cl. 208-10.000.
Auclair, Michel; Lecacheur, Jean-Claude; and Le Parmentier, Louis, 4,195,779, Cl. 239-8.000.
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Beacco, Enzo; Bernardi, Luigi; Di Salle, Enrico; Falconi, Giovanni; and Patelli, Bianca, 4,196,288, Cl. 544-125.000.
Falk, Curt L.; and Johansson, Arne E. Tufting needle. 4,195,584, Cl. 112-222.000.
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Fang, Hsai-Yang; and Mehta, Harshavardhan C. Method of manufacturing sulfur-coated bamboo reinforcement member for concrete articles. 4,196,234, Cl. 427-291.000.
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Farina, Emilio Joseph: *See—*
Farina, Minnie, 4,195,372, Cl. 4-234.000.
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Schulz, Jerry D.; and Faulkner, Bobby P., 4,195,986, Cl. 75-82.000.
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Knapp, John S., 4,195,572, Cl. 102-90.000.
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Brown, Kenneth R., 4,196,419, Cl. 340-347.0AD.
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Filtrol Corporation: *See—*
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Schuster, Wilhelm; Wollmann, Klaus; and Stahl, Jurgen, 4,195,549, Cl. 87-1.000.
Findeisen, Heinz H., to Digital Equipment Corporation. A.C. tape reel servo. 4,196,375, Cl. 318-6.000.
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Firebaugh, Dale C., to Richdel, Inc. Solid state differential temperature regulator for a solar heating system. 4,195,621, Cl. 126-416.000.
Firestone Tire & Rubber Company, The: *See—*
Coley, Ralph J., 4,195,654, Cl. 137-238.000.
Schonfeld, Steven E.; and Ravagnani, Frederick J., 4,195,679, Cl. 152-359.000.
Fischer, Hermann, to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft (M.A.N.). Bearer ring - printing press cylinder alignment and connection construction for rotary printing machines. 4,195,568, Cl. 101-216.000.
Fisco Products Limited: *See—*
Burton, Stanley J., 4,195,762, Cl. 227-156.000.
Fisher, Albert W.: *See—*
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Fitzgerald, Joseph C. Volumetric flow measuring device. 4,195,521, Cl. 73-227.000.
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Fleischer, Henry. System for forming a fluid-tight seal. 4,195,851, Cl. 277-27.000.
Fleming, James C.: *See—*
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Bass, Merlyn D.; Wolf, David L.; Grimstad, Ronald N.; and Flenniken, John M., 4,195,704, Cl. 180-14.00R.
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Mencacci, Samuel A., 4,196,225, Cl. 426-523.000.
Peake, Clinton J.; Harnish, Wayne N.; and Davidson, Bruce L., 4,196,284, Cl. 544-8.000.
Focella, Antonino; and Heveran, John E., to Hoffmann-La Roche Inc. Immunoassay for phencyclidine. 4,196,185, Cl. 424-1.000.
Fockens, Tallienco W. H.: *See—*
Kip, Harm J.; and Fockens, Tallienco W. H., 4,196,418, Cl. 340-152.00T.
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Ford Industries, Inc.: *See—*
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Ford Motor Company: *See—*
Chattha, Mohinder S., 4,196,270, Cl. 525-110.000.
Davies, Richard G., 4,196,025, Cl. 148-36.000.
Dick, Heinz, 4,196,459, Cl. 362-66.000.
Mahoney, Lee R., 4,196,148, Cl. 260-582.000.
Muller, George H., 4,196,414, Cl. 340-58.000.
Rao, Vemulapalli D. N.; Howes, Benjamin T.; and Jaimee, Angelo, 4,195,478, Cl. 60-282.000.
Rogerson, Jerry B.; and Harrison, Robert S., 4,196,156, Cl. 261-39.00B.
Westerman, Charles W., 4,196,436, Cl. 343-854.000.
Willermet, Pierre A.; and Pett, Robert A., 4,196,182, Cl. 423-449.000.
Forman, Aubry S.; Schultz, Charles A., Jr.; and Schultz, John F., to Digital Data, Inc. Secure SCA broadcasting system including subscriber actuated portable receiving terminals. 4,196,310, Cl. 178-22.000.
Foshee, William R., to Best Lock Corporation. Mortise lock adaptation to key-removable cores. 4,195,504, Cl. 70-369.000.
Foster Wheeler Energy Corporation: *See—*
Steiner, Peter; and Gutterman, Carl, 4,196,174, Cl. 423-230.000.
Fotland, Richard A.; and Carrish, Jeffrey J., to Dennison Manufacturing Company. Double transfer electrophotography. 4,195,927, Cl. 355-3.0TE.
Fowler, Joseph A.: *See—*
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Foxboro Company, The: *See—*
Kalinoski, Richard W.; and Vignos, James H., 4,195,517, Cl. 73-194.00A.
Frank, Arlen W.; Daigle, Donald J.; and Kullman, Russell M. H., to United States of America, Agriculture. Ternary salts of tris(aminomethyl)phosphines and their oxides. 4,196,149, Cl. 260-583.00E.
Frank, Arlen W., to United States of America, Agriculture. Quaternary phosphonium salts bearing carbamate groups. 4,196,302, Cl. 560-24.000.
Franklin GNO Corporation: *See—*
Cohen, Martin J., 4,195,513, Cl. 73-23.000.
Franks, Lawrence A., to Burr Oak Tool & Gauge Company. Fin collection and transport apparatus. 4,195,540, Cl. 83-95.000.
Franks, Neal E.; and Varga, Julianna K., to Akzona Incorporated. Process for making a shapeable cellulose and shaped cellulose products. 4,196,282, Cl. 536-56.000.
Frantz, Earl L., to Carpenter Technology Corporation. Stable bimetal strip. 4,196,261, Cl. 428-616.000.
Franz, John E.; and Kaufman, Robert J., to Monsanto Company. N-Trifluoroacetyl-N-phosphinothioylmethylglycine esters. 4,195,983, Cl. 71-87.000.
Frazee, Ralph E., Jr., to Western Electric Company, Incorporated. Catenary controller. 4,195,791, Cl. 242-45.000.
Frean, Robert George: *See—*
Lawrence, Ernest R.; and Bradley, Thomas L., 4,195,467, Cl. 56-296.000.
Freche, Charles; and Lotteau, Jacques. Illuminating spectacles with variable magnifying power. 4,195,918, Cl. 351-158.000.
Frederick, Allen H.: *See—*
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Fredericks, George, to List, Dr. Dr. Hans, Prof. Apparatus for continuously measuring rates of flow of a liquid. 4,195,516, Cl. 73-194.00M.
Freeman, James F. Portable liquid pesticide transfer assembly. 4,195,672, Cl. 141-91.000.
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Schreckenberg, Manfred; Konig, Klaus; Freitag, Dieter; and Serini, Volker, 4,196,276, Cl. 528-176.000.
Friedli, Hans, to Swiss Aluminium Ltd. Absorption of magnetic field lines in electrolytic reduction cells. 4,196,067, Cl. 204-243.00M.
Friedman, Frank: *See—*
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Fritz, Richard A.: *See—*
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Frock, Gerald I.: *See—*
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Fry, Stephen M., to Hughes Aircraft Company. Multi-line ammonia laser utilizing intra-molecular energy transfer via a buffer gas. 4,196,403, Cl. 331-94.50G.
Frymaster Corporation, The: *See—*
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Fuji Jukogyo Kabushiki Kaisha: *See—*
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Fuji Photo Film Co., Ltd.: *See—*
Adachi, Keiichi; Hirano, Shigeo; Ikeda, Tadashi; and Mikami, Takeshi, 4,195,999, Cl. 430-507.000.
Nakajima, Yosuke; Hoshi, Yoshiyuki; and Fukuoka, Takayoshi, 4,195,996, Cl. 430-380.000.
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Fuji Photo Optical Co., Ltd.: *See—*
Doi, Yoshikazu; Sakai, Yutaka; and Ohono, Kazunori, 4,195,912, Cl. 350-184.000.
Fujie, Hiroshi; Kai, Osamu; Masunaga, Eiji; Sumitani, Etuo; and Shimomai, Akiro, to Teijin Limited. Flame resistant wholly aromatic polyamide fibers. 4,196,118, Cl. 260-45.70P.
Fujie, Kunio; Nakayama, Wataru; Kuwahara, Heikichi; Daikoku, Takahiro; and Kakizaki, Kimio, to Hitachi, Ltd.; and Hitachi Cable, Ltd. Heat-transfer wall for condensation and method of manufacturing the same. 4,195,688, Cl. 165-133.000.
Fujimoto, Akihiro; Miura, Isami; and Noguchi, Kazuo, to Daihachi Chemical Industry Co., Ltd. Separation of cobalt and nickel by solvent extraction. 4,196,076, Cl. 210-21.000.
Fujisawa Pharmaceutical Co., Ltd.: *See—*
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Fukushima, Yoshikiyo, to Nippon Concrete Industries Co., Ltd. Concrete piles suitable as foundation pillars. 4,195,487, Cl. 405-257.000.
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Funabiki, Kyohei; Matsushima, Noriaki; and Inouye, Naomitsu, to Sumitomo Durez Company, Ltd. Process for producing resin-coated foundry sand. 4,196,114, Cl. 260-28.00P.
Funatsu, Chuhei; and Hirata, Toshikiyo, to Toyo Tsushinki Kabushiki Kaisha. Surveillance system for collision avoidance of aircrafts using radar beacon. 4,196,434, Cl. 343-6.50R.

Furukawa, Haruki: *See—*
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Gailey, J. Lynn: *See—*
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Gallagher, Nicholas D.; and Gibbs, Richard L., to Brown-Bridge Mills, Inc., The. Method for forming a strippable backing material for pressure-sensitive adhesive carrying substrates. 4,195,556, Cl. 93-58.0ST.
Galloup, Clifford L., to Cooper Industries, Inc. Conductor unwrapping bit. 4,195,401, Cl. 29-764.000.
Galloway, Terry R., to United States of America, Energy. Method and apparatus for controlling accidental releases of tritium. 4,196,176, Cl. 423-248.000.
Gamo, Takaharu; Moriwaki, Yoshio; Yamashita, Toshio; and Fukuda, Masataro, to Matsushita Electric Industrial Co., Ltd. Hydrogen storage material. 4,195,989, Cl. 75-175.500.
Gannon, David J., to Canadian Industries Limited. Hydrophilic thio compounds as selective depressants in the flotation separation of copper and molybdenum. 4,196,073, Cl. 209-167.000.
Gante, Joachim; Kurmeier, Hans-Adolf; Orth, Dieter; Schacht, Erich; and Wild, Albrecht, to Merck Patent Gesellschaft mit beschraenkter Haftung. Alkyne compounds and method of use. 4,196,215, Cl. 424-308.000.
Gard, Leslie H.; and Phillips, Darwin E., to SCI Systems, Inc. Rotary printer and rotor structure. 4,195,936, Cl. 400-124.000.
Garis, Eric V.: *See—*
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Garrett Corporation, The: *See—*
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Garrett, Michael E.; and Smith, Kenneth C., to BOC Limited. Sewage treatment. 4,196,074, Cl. 210-3.000.
Garrison, Ward S. Oil drain system. 4,195,710, Cl. 184-1.500.
Gates, Frank V., to Bell Telephone Laboratories, Incorporated. Vehicular telephone station set security pedestal. 4,196,319, Cl. 179-146.00R.
Gates Rubber Company, The: *See—*
Douros, John D., Jr.; and Warder, Ira T., Jr., 4,196,290, Cl. 544-266.000.
Gaur, Santosh P.: *See—*
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Gaus, Harry; Milutziki, Udo; and Schotte, Dietwald, to Braun Aktiengesellschaft. Phonograph turntable control system. 4,195,846, Cl. 274-15.00R.
Gaussens, Gilbert; and Lemaire, Francis, to Commissariat a l'Energie Atomique. Hydrophobic substrate with grafted hydrophilic inclusions. 4,196,065, Cl. 204-159.170.
Geary, Michael L., to Chartglen, Ltd. Pattern generating entertainment device. 4,196,461, Cl. 362-259.000.
Gehman, David R.; and Kirn, William A., to Rohm and Haas Company. Acrylic hair setting resins having high resistance to moisture and rapid removability from the hair with shampoo. 4,196,190, Cl. 424-47.000.
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Bintz, Miles F.; and Dehmer, Raymond L., deceased, 4,195,474, Cl. 60-730.000.
Cella, James A., 4,196,138, Cl. 260-440.000.
Downing, Arthur C., 4,195,428, Cl. 38-77.200.
Evans, Ross M., Jr.; and Siebold, Donald J., 4,196,340, Cl. 219-245.000.
Haaf, William R.; and Cooper, Glenn D., 4,196,116, Cl. 260-42.180.
Miller, Edward B.; and Eichelberger, Charles W., 4,196,360, Cl. 307-270.000.
Parks, Harold G., 4,196,373, Cl. 315-14.000.
Payne, Thomas R., 4,196,330, Cl. 219-10.55B.
Pohl, Walter J., 4,196,462, Cl. 361-33.000.
Qurnell, Franklin D.; and Sauer, George A., 4,196,048, Cl. 176-19.00R.
Salem, Robert J., 4,196,406, Cl. 333-141.000.
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Hunt, Guilbert M., 4,195,730, Cl. 206-221.000.
General Motors Corporation: *See—*
Aspinwall, Robert H., 4,195,473, Cl. 60-39.290.
Johnston, Richard W.; Neuman, John G.; Schroeder, Thaddeus; and Traub, Norman L., 4,195,673, Cl. 141-349.000.
Mathues, Thomas P.; and Parker, Donald L., 4,195,484, Cl. 60-547.00R.
Robinson, Donovan L., 4,195,472, Cl. 60-39.16S.
Smith, Lyle B., 4,195,652, Cl. 137-43.000.
Tundo, Frank; and Schneidewind, Edward A., 4,195,866, Cl. 292-127.000.
Verdouw, Albert J., 4,195,475, Cl. 60-754.000.
Weathers, Lawrence M.; and Wellenkotter, Carl A., 4,195,605, Cl. 123-119.00A.
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Wood, Ronald M., 4,195,476, Cl. 60-737.000.
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GenRad, Inc.: *See—*
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George, David A.; Strauss, Bernard D.; and Weisman, Irving H., to United States of America, Army. Sampling valve. 4,195,525, Cl. 73-422.0TC.
Georgia-Pacific Corporation: *See—*
Rasmussen, Holger; and Jespersen, Paul N., 4,195,399, Cl. 29-429.000.
Gerhard, Walter U.: *See—*
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Gerkey, Kenneth S., to Westinghouse Electric Corp. Remote gaging apparatus. 4,195,411, Cl. 33-143.00L.
Gesellschaft fur Kernforschung m.b.H.: *See—*
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Geus, Jacob H.; and Swart, Louis M., to U.S. Philips Corporation. Television camera tube with conductive or secondary emissive region between window seal and mesh. 4,196,369, Cl. 313-365.000.
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Giannuzzi, Louis N. Anchor bolt assembly. 4,195,547, Cl. 85-74.000.
Gianotti, Jerome R.; and Hughes, Thomas J. Step assembly for cast structures and method of installation. 4,195,709, Cl. 182-90.000.
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Gibson, Mark G.: *See—*
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Gilead, Gideon. Three layer irrigation tube and apparatus and method for producing same. 4,195,784, Cl. 239-542.000.
Gilson, Richard D.; and Ventola, Ronald W., to Ohio State University, The. Kinesthetic tactile display system. 4,195,802, Cl. 244-17.130.
Gizzarelli, Nicholas, Sr. Rescue vehicle. 4,195,694, Cl. 169-70.000.
Glabe, Elmer F.; and Rebhan, Herbert J., to Food Technology Products. Feeding dairy cattle. 4,196,194, Cl. 424-177.000.
Glabe, Elmer F.; and Rebhan, Herbert J., to Food Technology Products. Feeding beef cattle. 4,196,195, Cl. 424-177.000.
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Goebel, Diethelm: *See—*
Zamja, Klaus; and Goebel, Diethelm, 4,195,907, Cl. 350-96.320.
Goetz, Carl: *See—*
United States of America, National Aeronautics and Space Administration; Goetz, Carl; and Ingle, William M., 4,195,666, Cl. 137-625.400.

Gold, Elijah H.; and Solomon, Daniel M., to Schering Corporation. 1-Benzhydryl-2-benzimidoyl-azetidine. 4,196,124, Cl. 260-239.00A.

Goldman, Jerome L. Shock absorbing structure and method for off shore jack-up rigs. 4,195,950, Cl. 405-195.000.

Goldstein, Ralph; and Swanson, Ralph S., to Allstate Hosiery Sales, Inc.; and Connie Lee Hosiery Mills, Inc., part interest to each. Aerated stocking. 4,195,497, Cl. 66-185.000.

Gomez, I. Luis, to Monsanto Company. Chemically reducing residual acrylonitrile monomer in nitrile polymers and shaped packaging materials formed therefrom. 4,196,111, Cl. 260-23.00S.

Goodacre, Stephen P., to Lansing Bagnall Limited. Steering linkages and vehicles incorporating them. 4,195,858, Cl. 280-95.00R.

Goodin, Raymon L. Pool cleaning apparatus. 4,195,371, Cl. 4-172.150.

Goodyear Tire & Rubber Company, The: *See*—
Sawyer, John M.; and Harris, John R., 4,196,252, Cl. 428-246.000.

Gordon, Ellison T. Floating system surface liquids retrieval. 4,196,087, Cl. 210-242.00S.

Goretta, Louis A.; and Otremba, Robert R., to Nalco Chemical Company. Continuous process for the preparation of an acrylic acid-methyl acrylate copolymer in a tubular reactor. 4,196,272, Cl. 526-64.000.

Gottel, Otto, to Burkert GmbH. Electromagnetic valve with electric signal generator. 4,195,662, Cl. 137-554.000.

Graham, Boynton, to Du Pont de Nemours, E. I., and Company. Photopolymerizable compositions containing selected cellulose acetate butyrate as a binder. 4,195,997, Cl. 430-286.000.

Graham, Kenneth A., to Chrysler Corporation. Fuel pump and motor assembly. 4,195,971, Cl. 417-366.000.

Grant, John S.: *See*—
Ricci, John D.; and Grant, John S., 4,195,794, Cl. 242-99.000.

Gray, George W.: *See*—
Coates, David; Gray, George W.; and McDonnell, Damien G., 4,195,916, Cl. 350-346.000.

Gray, Jerry D.: *See*—
Priel, Ury; Gray, Jerry D.; and Frederick, Allen H., 4,196,228, Cl. 427-88.000.

Grayum, Clyde: *See*—
Smith, Truman; and Grayum, Clyde, 4,195,452, Cl. 52-11.000.

Great Northern Corporation: *See*—
Bell, Norman H., 4,195,732, Cl. 206-391.000.

Green, Clarence A., to Xerox Corporation. Two direction scan sorting technique. 4,195,928, Cl. 355-51.000.

Gregory, Alvin L. Power plant. 4,195,481, Cl. 60-516.000.

Grenier, Georges: *See*—
Rancurel, Alain; and Grenier, Georges, 4,196,217, Cl. 424-316.000.

Gresen Manufacturing Company: *See*—
Schmiel, Herbert H., 4,195,551, Cl. 91-358.00A.

Gretzky, Anthony J.: *See*—
Russell, Jack A.; Pratt, Goodrich B.; and Gretzky, Anthony J., 4,195,920, Cl. 353-26.00A.

Griffin, Robert M. Shovel coupling with angle of attack adjustment. 4,195,697, Cl. 172-730.000.

Griffiths, Robert M. Polyphonic sound system. 4,196,313, Cl. 179-1.00M.

Grimes, Gary C. Jacking device. 4,195,818, Cl. 254-94.000.

Grimstad, Ronald N.: *See*—
Bass, Merlyn D.; Wolf, David L.; Grimstad, Ronald N.; and Flenniken, John M., 4,195,704, Cl. 180-14.00R.

Grochowski, Walter Z., to United States Steel Corporation. Car for transporting a ladle of hot metal and charging the metal to a furnace. 4,195,822, Cl. 266-165.000.

Grohmann, Klaus, to Hartung, Kuhn & Co. Maschinenfabrik GmbH. Equipment for operating coke oven service machines. 4,196,053, Cl. 202-227.000.

Gross, Leo H. Portable hanging shelf. 4,195,577, Cl. 108-31.000.

Gruber, Clarence R. Sawdust removal device. 4,195,403, Cl. 30-123.300.

Grun, Larry: *See*—
Bogner, Max; and Grun, Larry, 4,195,493, Cl. 63-15.000.

Gruntzig, Andreas; and Gleichner, Hans, to Schneider Medintag AG. Catheter arrangement, method of catheterization, and method of manufacturing a dilatation element. 4,195,637, Cl. 128-348.000.

Grunwald, Wolfgang: *See*—
Kothe, Wilfried; and Grunwald, Wolfgang, 4,195,974, Cl. 8-138.000.

GTE Automatic Electric Laboratories, Incorporated: *See*—
Morgan, John H., 4,195,758, Cl. 225-98.000.

Guillaume, Jacques: *See*—
Dumont, Claude; Guillaume, Jacques; and Nedelec, Lucien, 4,196,209, Cl. 424-267.000.

Guillory, Henry. Sound distributing system improvements. 4,196,314, Cl. 179-1.00G.

Guillot, Edmund P.: *See*—
Benoit, Roland A.; and Guillot, Edmund P., 4,195,578, Cl. 108-144.000.

Gulf Oil Corporation: *See*—
Murphy, Clarence R.; Thackaberry, S. Paul; Boehme, Robert E., deceased; and Boehme, Helen J., legal representative, 4,196,305, Cl. 568-758.000.

Gunter M. Voss: *See*—
Voss, Gunter M.; and Schneider, Herbert, 4,195,587, Cl. 114-218.000.

Gurtler, Richard W.: *See*—
Baghdadi, Aslan; and Gurtler, Richard W., 4,196,041, Cl. 156-620.000.

Gurwicz, David, to Chloride Group Limited. DC-AC Converter including synchronized switching. 4,196,469, Cl. 363-131.000.

Gustav F. Gerdts KG: *See*—
Willenbrock, Helmut; and Schittek, Friedrich, 4,196,384, Cl. 324-446.000.

Gustavsson, Varne; and Salomonsson, Manne, to Aktiebolaget Bofors. Device for servo system with closed servo circuit. 4,196,380, Cl. 318-630.000.

Gutin, Leonid I.: *See*—
Shapiro, Semen V.; Gutin, Leonid I.; Kiyamov, Rinat N.; Okhotnikov, Viktor A.; Roginskaya, Ljubov E.; Kazantsev, Vladimir G.; and Novichkov, Vladimir E., 4,196,468, Cl. 363-75.000.

Gutridge, Jack E., to Pullman Incorporated. Monorail car stabilizing system. 4,195,576, Cl. 105-147.000.

Gutterman, Carl: *See*—
Steiner, Peter; and Gutterman, Carl, 4,196,174, Cl. 423-230.000.

H. H. Robertson Company: *See*—
Anderson, John W., 4,195,459, Cl. 52-394.000.
Anderson, John W.; and Lindner, Robert G., 4,195,460, Cl. 52-528.000.

Haaf, William R.; and Cooper, Glenn D., to General Electric Company. Impact resistant polyphenylene ether compositions containing EPDM rubber-modified alkenyl aromatic resins and hydrogenated diblock copolymers. 4,196,116, Cl. 260-42.180.

Haar, Gerhard; and Swoboda, Josef, to ITT Industries, Inc. Automotive turn signal flasher unit having integral acoustic signal means. 4,196,415, Cl. 340-75.000.

Hadley, John, to Chubb & Son's Lock and Safe Company Limited. Security systems. 4,196,347, Cl. 455-603.000.

Haeny & Cie. AG.: *See*—
Heimgartner, Hans; and Wirz, Karl, 4,195,752, Cl. 222-61.000.

Haertle, Klaus, to Auergesellschaft GmbH. Breathing apparatus with flow control. 4,195,627, Cl. 128-202.260.

Hafner, Walter V.: *See*—
Morris, Earl L.; Hafner, Walter V.; and Sally, Theodore J., 4,195,374, Cl. 4-427.000.

Hagbjer, Gunnar I.; and Sylwan, Odd B., to Reduc Acoustics AB. Sandwich structures with partial damping layers. 4,195,713, Cl. 188-1.00B.

Hageluken, Hubert P.: *See*—
Walther, Carl K.; Walther, Henning D.; Hageluken, Hubert P.; and Temme, Karl, 4,195,447, Cl. 51-163.200.

Hagg, Henry W.: *See*—
Hagg, Wilbert F.; and Hagg, Henry W., 4,195,677, Cl. 150-52.00G.

Hagg, Wilbert F.; and Hagg, Henry W. Golf club cover. 4,195,677, Cl. 150-52.00G.

Hajnal, Stephen. Snorkel camera system. 4,195,922, Cl. 354-79.000.

Halasz, Alexander; and Cohen, David, to Clairol Incorporated. Dyeing keratin fibers with 2-substituted m-toluenediamines. 4,196,145, Cl. 260-573.000.

Halbrand, Inc.: *See*—
Halford, George C., 4,195,629, Cl. 128-206.130.

Haley, Jack R.; Smith, Jimmy B.; and Mansfield, H. Vaughn, to Peabody Coal Company. Method for producing coke from fine and coarse coal. 4,196,051, Cl. 201-24.000.

Halford, George C., to Halbrand, Inc. Face mask. 4,195,629, Cl. 128-206.130.

Hall, Henry P., to GenRad, Inc. Method of and apparatus for automatic measurement of impedance or other parameters with microprocessor calculation techniques. 4,196,475, Cl. 364-482.000.

Hall, Marshall J. Combination hair/hand/body dryer and vapor dispenser. 4,195,416, Cl. 34-90.000.

Hall, Melvin D. Expandable mandrels. 4,195,792, Cl. 242-72.00B.

Hallett, Robert L.: *See*—
Bentzen-Bilkvist, Ib; and Hallett, Robert L., 4,195,954, Cl. 406-135.000.

Halliburton Company: *See*—
Johnson, Howard D.; and Snyder, Kenneth J., 4,196,094, Cl. 252-103.000.

Hammerschmitt, Peter: *See*—
Manzke, Klaus; Hammerschmitt, Peter; and Uhl, Karl, 4,196,456, Cl. 360-106.000.

Hamuro, Yasumasa; Naka, Akihiro; and Honjo, Shuichi, to Dai-Ich Kogyo Seiyaku Co., Ltd. Stabilized fuel slurry. 4,195,975, Cl. 44-51.000.

Han, Paul S., to C.A.H., Inc. Hair dryer. 4,196,343, Cl. 219-364.000.

Hanko, Jimmy: *See*—
Roccaforte, Harry I.; Hanko, Jimmy; and Schillinger, Joseph F., 4,195,765, Cl. 229-52.00B.

Hansen, Larry J.: *See*—
Gablin, Kenneth A.; and Hansen, Larry J., 4,196,169, Cl. 422-159.000.

Hansen, Paul A. Automatic biaxial sun tracking mechanism for solar energy utilization devices. 4,195,905, Cl. 350-83.000.

Hansen, Robert G., to Air Products and Chemicals, Inc. Method and apparatus for collecting and storing environmental gases. 4,195,524, Cl. 73-421.50R.

Hansen, Willi: *See*—
Wittkopp, Helmut; Berstein, Garrj; Heymanns, Lothar; and Hansen, Willi, 4,195,957, Cl. 408-148.000.

Hanson, Peter R.: *See*—
Vogler, Jes; Hanson, Peter R.; and Thorsen, Niels P., 4,196,326, Cl. 200-81.00R.

Hanyo, Susumu: *See*—
Kawanami, Shunpei; and Hanyo, Susumu, 4,195,506, Cl. 72-8.000.

Hara, Elmer H., to United States of America, Army. Clear air turbulence detector. 4,195,931, Cl. 356-346.000.
Haraguchi, Yoshifumi; Fukuyama, Hiroshi; and Kamiguchi, Shu, to Bridgestone Tire Company Limited. Device for measuring depth of tire tread groove in a tire. 4,195,413, Cl. 33-169.00B.
Harden, Dale R. Peg board scoring device. 4,195,767, Cl. 235-90.000.
Hardinge Brothers, Inc.: *See*—
Brown, Ivan R., 4,195,538, Cl. 82-27.000.
Hardt, Peter, to Lonza Ltd. Process for the catalytic production of 2-substituted pyridines. 4,196,287, Cl. 544-124.000.
Hardwick, John R.: *See*—
Martin, James W.; and Hardwick, John R., 4,195,586, Cl. 113-54.00R.
Hare, Wilbert K., to American Home Products Corporation. Baking pan and method of forming same. 4,195,747, Cl. 220-23.200.
Harden, Doyle V., to Dayco Corporation. Non-misting inking roll, method of making same, and ink for use therewith. 4,195,570, Cl. 101-348.000.
Hares, Barrington, to BSR Limited. Spindle adaptors. 4,195,848, Cl. 274-10.00S.
Harms, Robert L.; and Hutchison, Merle, to Conoco, Inc. Marine fouling control. 4,196,064, Cl. 204-147.000.
Harnish, Wayne N.: *See*—
Peake, Clinton J.; Harnish, Wayne N.; and Davidson, Bruce L., 4,196,284, Cl. 544-8.000.
Harris, John R.: *See*—
Sawyer, John M.; and Harris, John R., 4,196,252, Cl. 428-246.000.
Harrison, Robert S.: *See*—
Rogerson, Jerry B.; and Harrison, Robert S., 4,196,156, Cl. 261-39.00B.
Harsco Corporation: *See*—
Ward, Thomas D., 4,196,079, Cl. 210-80.000.
Hart, Ronald L.: *See*—
Bradley, Hubert, Jr.; Bayless, Robert G.; Hart, Ronald L.; and Davis, Danny A., 4,195,645, Cl. 131-2.000.
Hartman, Ronald L.: *See*—
Joseph, Douglas C.; and Hartman, Ronald L., 4,196,001, Cl. 430-502.000.
Hartung, Kuhn & Co. Maschinenfabrik GmbH: *See*—
Grohmann, Klaus, 4,196,053, Cl. 202-227.000.
Hartwell, Paul A.: *See*—
Deuker, Daniel A.; and Hartwell, Paul A., 4,195,575, Cl. 102-232.000.
Harvest, Nils-Ole; Hasberg, Niels; and Nielsen, Kaj, to Danfoss A/S. Rotary speed ratio control arrangement. 4,196,376, Cl. 318-78.000.
Hasberg, Niels: *See*—
Harvest, Nils-Ole; Hasberg, Niels; and Nielsen, Kaj, 4,196,376, Cl. 318-78.000.
Hastwell, Peter J. Cooling system. 4,195,488, Cl. 62-4.000.
Hata, Toju: *See*—
Omura, Satoshi; Tanaka, Haruo; Awaya, Juichi; and Hata, Toju, 4,196,266, Cl. 435-125.000.
Hattori, Eiji: *See*—
Watanabe, Seizaburo; Seo, Yuji; Hattori, Eiji; Okuda, Masao; and Watanabe, Hiroshi, 4,196,267, Cl. 521-93.000.
Hattori, Yoshio, to Niles Parts Co., Ltd. Rear window washer wiper operating switch. 4,196,322, Cl. 200-5.00R.
Hauer, Charles R., to Eikonix Corporation. Improving incandescent bulb efficiency. 4,196,368, Cl. 313-345.000.
Haugwitz, Rudiger D., to E. R. Squibb & Sons, Inc. Polyether derivatives. 4,196,250, Cl. 424-278.000.
Hauni-Werke Korber & Co. KG.: *See*—
Wochnowski, Waldemar; and Thiele, Willi, 4,195,647, Cl. 131-140.00P.
Hawkins, Gerald P., to Occidental Industries, Ltd. Two piece container end. 4,195,749, Cl. 220-268.000.
Hawkins, William L. Universally steerable vehicle. 4,195,703, Cl. 180-7.00R.
Hayama, Isao: *See*—
Usui, Keizaburo; and Hayama, Isao, 4,195,720, Cl. 192-0.092.
Hearst, John E.; Rapoport, Henry; Isaacs, Stephen; and Shen, Che-Kun J., to University of California, Regents of the. Psoralens. 4,196,281, Cl. 536-28.000.
Heath, Joyce A. Astro-wheel. 4,195,424, Cl. 35-44.000.
Hechinger, Albert R. Skateboard with adjustable tail section. 4,195,857, Cl. 280-87.04A.
Hedman, Kaj B.: *See*—
Kubat, Josef; Hedman, Kaj B.; and Albihn, Per L., 4,196,105, Cl. 260-2.300.
Heemaf B.V.: *See*—
Schiethart, Lodewijk, 4,196,366, Cl. 310-162.000.
Heenan, Sidney A., to Amerace Corporation. Snowplowable pavement marker and base member therefor. 4,195,945, Cl. 404-16.000.
Hehnen, Josef: *See*—
Butner, Karl; Hehnen, Josef; and Rudiger, Reiner, 4,196,444, Cl. 357-81.000.
Heier, William, to Refreshment Machinery Incorporated. Slush dispenser. 4,195,754, Cl. 222-146.00C.
Heimgartner, Hans; and Wirz, Karl, to Haeny & Cie. AG. Apparatus for the essentially uniform feed of a fluent medium by means of reciprocating feed pistons. 4,195,752, Cl. 222-61.000.
Heismann, Richard A., to Outboard Marine Corporation. Multi-function interlock self-propelled lawn mower with blade clutch. 4,195,466, Cl. 56-10.500.
Heitmann, Knut: *See*—
Leitz, Ludwig; and Heitmann, Knut, 4,195,425, Cl. 356-28.000.
Helams, Paul A., to Austin Industries, Inc. Offset adapter. 4,195,860, Cl. 280-460.00A.
Heller, Juerg: *See*—
Fleck, Fritz; and Heller, Juerg, 4,196,229, Cl. 427-158.000.
Hellier, Stephen J., to S.A.E.S. Getters S.p.A. Alkali metal vapor generator. 4,195,891, Cl. 316-5.000.
Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA): *See*—
Finkensiep, Friedhelm; and Meye, Reinhold W., 4,196,163, Cl. 264-148.000.
Henkhaus, Oscar E. Arm chair coaster. 4,195,880, Cl. 297-194.000.
Henning, Wolfgang H. Jubilee clip fastening. 4,195,393, Cl. 24-280.000.
Herburg, Rudolf, to Hinrichs Gesellschaft mit beschrankter Haftung. Device for bending ring segment-shaped plate blanks into conically shaped parts. 4,195,509, Cl. 72-167.000.
Herchenroeder, Robert B. H., to Cabot Corporation. Weldable alloys. 4,195,987, Cl. 75-122.000.
Hercules Incorporated: *See*—
Spence, Gavin G., 4,196,253, Cl. 428-323.000.
Hermans, Hubert K. Fr.: *See*—
Sanczuk, Stefan; and Hermans, Hubert K. Fr., 4,196,210, Cl. 424-267.000.
Herr, Robert W.; and Sigl, Edward D., to Bowmar Instrument Corporation. Roller bearing internal pinion counter. 4,195,768, Cl. 235-103.000.
Herrington, Billie M. Door casing hardware paint shield. 4,195,590, Cl. 118-505.000.
Hertel, Hasso; Curtius, Horst; Feess, Erich; and Karacsonyi, Paul, to Hoechst Aktiengesellschaft. Process for printing with developing dyes which employs having ether substituents derived from glycols, polyglycols, or alkoxy derivatives thereof. 4,195,973, Cl. 8-46.000.
Hertz, Carl H. Method and apparatus for forming a compound liquid jet particularly suited for ink-jet printing. 4,196,437, Cl. 346-1.100.
Herwegh, Norbert: *See*—
Berger, Ernst; and Herwegh, Norbert, 4,195,850, Cl. 277-12.000.
Hesselberg, Rune E.: *See*—
Troedsson, Per Y.; and Hesselberg, Rune E., 4,196,264, Cl. 429-114.000.
Heveran, John E.: *See*—
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Heyer, Willy: *See*—
Becker, Kunibert; Heyer, Willy; Plevak, Lubomir; and Dodt, Jurgen, 4,195,953, Cl. 405-300.000.
Heymanns, Lothar: *See*—
Wittkopp, Helmut; Berstein, Garrj; Heymanns, Lothar; and Hansen, Willi, 4,195,957, Cl. 408-148.000.
Heymes, Rene; and Lutz, Andre, to Roussel Uclaf. 3-Acetoxymethyl-7-(iminoacetamido)-cephalosporanic acid derivatives. 4,196,205, Cl. 424-246.000.
Hickman, Jack L. Adjustable means to vary point of impact of over-and-under firearms. 4,195,432, Cl. 42-1.00R.
Hickman, John S.; and Jensen, Andrew P., to Capital Steel & Supply Co., a Division of Jensen Investment Corp. Insulated basement window assembly. 4,195,456, Cl. 52-208.000.
Higgs, William Y., to Intercontinental Marine Limited. Life saving apparatus for vessels. 4,195,380, Cl. 9-9.000.
Hill, Emile R.; and De Leo, Louis P., to Singer Company, The. Synchro power buffer amplifier. 4,196,397, Cl. 330-84.000.
Hillnhutter, Friedrich W.: *See*—
Muller-Spath, Erich; Muller, Konrad; Kister, Heinz; Schurhoff, Walter; Hillnhutter, Friedrich W.; and Laucht, Walter, 4,196,078, Cl. 210-75.000.
Hinds, Robert S.; and Diehl, John M., to Hinds, Robert S. Elastic cable exerciser bar. 4,195,835, Cl. 272-137.000.
Hinrichs Gesellschaft mit beschrankter Haftung: *See*—
Herburg, Rudolf, 4,195,509, Cl. 72-167.000.
Hinze, Adrien G.; Stigter, Hendrik G.; and Slettenhaar-von Piekartz, Maria L. A., to Emery Industries, Inc. Caprolactam copolyamides useful as hot melt adhesives for textiles. 4,196,108, Cl. 260-18.00N.
Hirai, Minoru: *See*—
Noguchi, Katsuichi; Maeda, Kazuo; Anzai, Yuriko; Hirai, Minoru; Izumi, Kazuo; and Niijima, Kenji, 4,195,649, Cl. 131-261.00R.
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Hirano, Shigeo: *See*—
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Hirata, Toshikiyo: *See*—
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Hishida, Tadanori: *See*—
Kuwagaki, Hiroshi; Hishida, Tadanori; Yano, Kohzo; and Inami, Yasuhiko, 4,195,917, Cl. 350-357.000.
Hitachi Cable, Ltd.: *See*—
Fujie, Kunio; Nakayama, Wataru; Kuwahara, Heikichi; Daikoku, Takahiro; and Kakizaki, Kimio, 4,195,688, Cl. 165-133.000.
Hitachi, Ltd.: *See*—
Fujie, Kunio; Nakayama, Wataru; Kuwahara, Heikichi; Daikoku, Takahiro; and Kakizaki, Kimio, 4,195,688, Cl. 165-133.000.
Koike, Keiichi, 4,196,011, Cl. 106-38.200.
Kuniya, Keiichi; Arakawa, Hideo; Maeda, Kunihiro; and Morita, Keiichi, 4,196,442, Cl. 357-67.000.
Kurosawa, Yukio; Kawakubo, Yukio; and Sugawara, Hiroyuki, 4,196,327, Cl. 200-144.00B.
Takahashi, Tadashi; and Morinaga, Shigeki, 4,195,585, Cl. 112-277.000.
Tobita, Hideyuki; and Nozaki, Koichi, 4,195,500, Cl. 68-12.00R.

Ho, Winston: *See*—
Mohrbacher, Richard J.; Ho, Winston; and Tutwiler, Gene, 4,196,300, Cl. 549-90.000.
Hochtemperatur-Reaktorbau GmbH: *See*—
Kissling, Guenter; and Filser, Erich, 4,195,457, Cl. 52-224.000.
Hoechst Aktiengesellschaft: *See*—
Hertel, Hasso; Curtius, Horst; Feess, Erich; and Karacsonyi, Paul, 4,195,973, Cl. 8-46.000.
Kleiner, Hans-Jerg; Dursch, Walter; and Linke, Fritz, 4,196,141, Cl. 260-545.00P.
Wojtech, Bernhard; Ehlers, Klaus P.; and Scheibitz, Wolfgang, 4,196,180, Cl. 423-321.00S.
Hoechst France: *See*—
Vallejos, Jean Claude; and Christidis, Yani, 4,196,299, Cl. 549-79.000.
Hoehn, Randall J., to Caterpillar Tractor Co. Method for producing film exposed to different images. 4,195,995, Cl. 430-142.000.
Hofbauer, Peter; and Schwarz, Cornelia, to Volkswagenwerk Aktiengesellschaft. Turbulence chamber diesel engine. 4,195,597, Cl. 123-30.00C.
Hoffmann, Herwig: *See*—
Decker, Martin; Hoffmann, Herwig; Hupfer, Leopold; and Toussaint, Herbert, 4,196,147, Cl. 260-577.000.
Huchler, Otto H.; Winderl, Siegfried; Mueller, Herbert; and Hoffmann, Herwig, 4,196,130, Cl. 260-346.110.
Hoffmann-La Roche Inc.: *See*—
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Hofmann, Corris M.: *See*—
Fanshawe, William J.; Epstein, Joseph W.; Crawley, Lantz S.; Hofmann, Corris M.; and Safir, Sidney R., 4,196,120, Cl. 260-456.00P.
Hoht, Wolfgang; Reichert, Ingo; and Weidinger, Joachim, to Auergesellschaft GmbH. Device for monitoring operational readiness of a gas-measuring instrument. 4,196,428, Cl. 340-636.000.
Holec, N.V.: *See*—
Brinkman, Willem, 4,195,609, Cl. 123-139.00E.
Holle, Werner; and Bletz, Walter, to Ernst Leitz Wetzlar GmbH. Scanning grating for a focus detector. 4,195,909, Cl. 350-162.00R.
Hollen, James P. Apparatus for heating the air and suit of a free swimming diver. 4,195,619, Cl. 126-204.000.
Holly Sugar Corporation: *See*—
Melville, James C.; Beatty, Joseph M., II; and Satcher, Joe H., Jr., 4,196,017, Cl. 127-41.000.
Holstead, Colin: *See*—
Kilminster, Kenneth N.; and Holstead, Colin, 4,195,993, Cl. 430-225.000.
Holweg, Rainer: *See*—
Kluting, Bernd; and Holweg, Rainer, 4,195,881, Cl. 297-216.000.
Honda Giken Kogyo Kabushiki Kaisha: *See*—
Yamazaki, Shuichi; and Shimada, Shinichi, 4,195,477, Cl. 60-282.000.
Honeyman, R. Blakeley: *See*—
Slautterback, Fred A.; and Honeyman, R. Blakeley, 4,195,755, Cl. 222-146.0HE.
Honeywell Inc.: *See*—
Elias, Jack; and Olen, Arthur M., 4,195,769, Cl. 371-20.000.
Kabat, John L., 4,196,356, Cl. 307-117.000.
Honeywell Information Systems Inc.: *See*—
Lee, Ernest P., 4,196,431, Cl. 340-749.000.
Honjo, Shuichi: *See*—
Hamuro, Yasumasa; Naka, Akihiro; and Honjo, Shuichi, 4,195,975, Cl. 44-51.000.
Hooker Chemicals & Plastics Corp.: *See*—
Mose, Luciano; Schurig, Helmut; and Strasser, Bernd, 4,196,069, Cl. 204-257.000.
Hoover Universal, Inc.: *See*—
Kitchen, John P., 4,195,376, Cl. 5-255.000.
Kitchen, John P.; and Gabhart, Terry L., 4,195,377, Cl. 5-310.000.
Hopeman Brothers, Inc.: *See*—
Suttles, James M., 4,195,430, Cl. 40-518.000.
Hoppe, Walter; Junger, Hans; and Weissenfels, Franz, to Dynamit Nobel Aktiengesellschaft. Hardenable compositions of improved thermal stability. 4,195,458, Cl. 52-234.000.
Horii, Hideo: *See*—
Kaiya, Atsushi; Otsuki, Yutaka; and Horii, Hideo, 4,196,112, Cl. 260-23.70M.
Kaiya, Atsushi; Otsuki, Yutaka; and Horii, Hideo, 4,196,113, Cl. 260-23.70M.
Hornak, Steven S.; Lowdermilk, Robert S.; and Miller, Robert A., to Avco Corporation. Removable wash spray apparatus for gas turbine engine. 4,196,020, Cl. 134-167.00R.
Hoshi, Yoshiyuki: *See*—
Nakajima, Yosuke; Hoshi, Yoshiyuki; and Fukuoka, Takayoshi, 4,195,996, Cl. 430-380.000.
Houck, Stephen R., to Byers Photo Equipment Co., Inc. Apparatus for removing reprint photographic films from a carrier strip. 4,196,040, Cl. 156-584.000.
Houdaille Industries, Inc.: *See*—
Zalis, Albert A., 4,195,970, Cl. 417-269.000.
Hoven, El Don L., to Ford Industries, Inc. Binary-coded message communication. 4,196,311, Cl. 370-48.000.
Howes, Benjamin T.: *See*—
Rao, Vemulapalli D. N.; Howes, Benjamin T.; and Jaimee, Angelo, 4,195,478, Cl. 60-282.000.
Hozuma, Hiroshi: *See*—
Takahashi, Hisao; Nomura, Takeshi; Ohara, Yoshitomo; Nakanishi, Hajime; Miwa, Naotaka; Kawabe, Naoshi; Endo, Tomizo; Hozuma, Hiroshi; and Akimoto, Minoru, 4,196,050, Cl. 196-122.000.
Hubbert, Murray J.: *See*—
Thompson, Richard L.; Hubbert, Murray J.; and Wade, Vernon J., 4,195,816, Cl. 251-229.000.
Hubers, Ernst. Impregnating equipment and method of vacuum impregnation. 4,196,231, Cl. 427-240.000.
Huchler, Otto H.; Winderl, Siegfried; Mueller, Herbert; and Hoffmann, Herwig, to BASF Aktiengesellschaft. Manufacture of cyclic ethers. 4,196,130, Cl. 260-346.110.
Hudson, Donald E. Remote steering control for electric outboard motors. 4,195,588, Cl. 115-18.00E.
Hudson, John W.; and Dominick, Thomas F., to Ethyl Corporation. Process for preparing high cyclic phosphonitrilic halides. 4,196,179, Cl. 423-300.000.
Hughes Aircraft Company: *See*—
Dickerson, Arthur F., 4,196,463, Cl. 361-113.000.
Fry, Stephen M., 4,196,403, Cl. 331-94.50G.
Lichty, William R.; Ferrer, John J.; Cook, Lacy G.; and Ernstoff, Michael N., 4,195,915, Cl. 350-345.000.
Hughes, Donald W. K., to AMP Incorporated. Terminal housing having improved mounting means. 4,195,900, Cl. 339-125.00R.
Hughes, John L., to Quentron Optics Pty. Limited of c/-Stephen Su & Co. Mirror arrangement within an evacuated space for accurately focussing a large diameter, high power laser beam. 4,195,914, Cl. 350-294.000.
Hughes, Richard H., to RCA Corporation. CRT generating three inline beams and having shunts for weakening center beam horizontal magnetic deflection and strengthening vertical deflection. 4,196,370, Cl. 313-413.000.
Hughes, Thomas J.: *See*—
Gianotti, Jerome R.; and Hughes, Thomas J., 4,195,709, Cl. 182-90.000.
Huisman, Hendrikus F.; and Cats, Willem J., to U.S. Philips Corporation. Magnetic recording medium and method of manufacturing same. 4,196,258, Cl. 428-447.000.
Hujsak, Edward J.; and Siden, LeRoy E., to General Dynamics Corporation. Space platform docking device. 4,195,804, Cl. 244-161.000.
Hulsing, Kenneth L. Plunger valve nozzle. 4,195,783, Cl. 239-533.300.
Hunt, Guilbert M., to General Foods Corporation. Container having separate storage facilities for two materials. 4,195,730, Cl. 206-221.000.
Hunter, George S.: *See*—
Walker, Brian; Hunter, George S.; and Hunter, Susanne P., 4,196,027, Cl. 156-62.200.
Hunter, James B.; McGuire, George; D'Alessandro, A. F.; and Lawlor, Larry L., to Matthey Bishop, Inc. Catalyst comprising a metal substrate. 4,196,099, Cl. 252-437.000.
Hunter, Susanne P.: *See*—
Walker, Brian; Hunter, George S.; and Hunter, Susanne P., 4,196,027, Cl. 156-62.200.
Hupfer, Leopold: *See*—
Decker, Martin; Hoffmann, Herwig; Hupfer, Leopold; and Toussaint, Herbert, 4,196,147, Cl. 260-577.000.
Hupkes, Hendrik; and Hupkes, Henk. Shaving wood. 4,195,675, Cl. 144-120.000.
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Hupkes, Hendrik; and Hupkes, Henk, 4,195,675, Cl. 144-120.000.
Hurst, Kenneth. Mounting block for tufting machine gauge parts. 4,195,580, Cl. 112-79.00R.
Hurwitz, Harold S.: *See*—
Reick, Kenneth R.; Blumthal, William M.; and Hurwitz, Harold S., 4,195,591, Cl. 118-655.000.
Hutchison, Merle: *See*—
Harms, Robert L.; and Hutchison, Merle, 4,196,064, Cl. 204-147.000.
Hwang, Yu-Tang, to Chemplex Company. Process for preparing a polymerization catalyst. 4,196,098, Cl. 252-430.000.
Hydril Company: *See*—
Lewis, George E., 4,195,668, Cl. 138-30.000.
Hyman, David L.; Cayton, Robert J.; and Rosenquist, Kurt E., to Louverdrape, Inc. Color variable window covering. 4,195,680, Cl. 160-166.00A.
Hyten, Jesse G.; and Hyten, John I. Auxiliary air heater for fireplaces. 4,195,778, Cl. 237-51.000.
Hyten, John I.: *See*—
Hyten, Jesse G.; and Hyten, John I., 4,195,778, Cl. 237-51.000.
ICI Australia Limited: *See*—
Webber, Lionel G., 4,196,207, Cl. 424-251.000.
Ideal Toy Corporation: *See*—
Ace, Marshall, 4,195,437, Cl. 46-21.000.
Iizuka Electric Industry Company Limited: *See*—
Ishikawa, Kazuhiro, 4,196,328, Cl. 200-246.000.
Ikebukuro, Munemitsu; and Yamaguchi, Masao, to Nippondenso Co., Ltd. Hot water heating system. 4,195,777, Cl. 237-12.30B.
Ikeda, Hideo: *See*—
Takayama, Hidetaka; and Ikeda, Hideo, 4,196,246, Cl. 428-213.000.
Ikeda, Masahiko; Nakanishi, Mutsuo; and Katsumoto, Norio, to Sumitomo Metal Industries, Ltd. Submerged arc welding process. 4,196,335, Cl. 219-73.000.
Ikeda, Tadashi: *See*—
Adachi, Keiichi; Hirano, Shigeo; Ikeda, Tadashi; and Mikami, Takeshi, 4,195,999, Cl. 430-507.000.
Ikekawa, Nobuo: *See*—
DeLuca, Hector F.; Ikekawa, Nobuo; Tanaka, Yoko; and Kobayashi, Yoshiro, 4,196,133, Cl. 260-397.200.

Illinois Central Gulf Railroad: *See*—
Keeling, Ralph R.; and Seranne, Michel F., 4,195,442, Cl. 49-35.000.
Illinois Railway Equipment Company: *See*—
Nadherny, Rudolph E., 4,195,715, Cl. 188-210.000.
Imai, Kiyoshi; and Tanaka, Masaki, to Shin-Etsu Chemical Co. Ltd. Curable organopolysiloxane compositions. 4,196,273, Cl. 528-15.000.
Imanaka, Hiroshi; and Nishida, Minoru, to Fujisawa Pharmaceutical Co., Ltd. Antibacterial composition. 4,196,193, Cl. 424-114.000.
Imes, Jack, Jr. Multidirectional visual display device. 4,195,910, Cl. 350-167.000.
Immunology Research Foundation, Inc.: *See*—
Burton, Lawrence; and Friedman, Frank, 4,196,121, Cl. 260-112.00B.
Imperial Chemical Industries Limited: *See*—
Kennedy-Skipton, Henry K., 4,196,008, Cl. 106-115.000.
Inaba, Masao: *See*—
Tama, Tomoo; Inaba, Masao; and Kashigi, Kazuo, 4,196,449, Cl. 358-183.000.
Inaba, Shizuo, to Pioneer Electronic Corporation. Turntable rotation controlling apparatus. 4,195,845, Cl. 274-9.00R.
Inami, Yasuhiko: *See*—
Kuwagaki, Hiroshi; Hishida, Tadanori; Yano, Kohzo; and Inami, Yasuhiko, 4,195,917, Cl. 350-357.000.
Inata, Hiroo; Ogasawara, Makoto; Morinaga, Tsuto; and Norike, Akihiro, to Teijin Limited. Cured aromatic polyester composition and process for its production. 4,196,066, Cl. 204-159.150.
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Waiblinger, Paul, 4,195,961, Cl. 414-120.000.
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Tarantola, Luciano, 4,195,469, Cl. 57-311.000.
Ingham, John D.: *See*—
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Ingle, William M.: *See*—
United States of America, National Aeronautics and Space Administration; Goetz, Carl; and Ingle, William M., 4,195,666, Cl. 137-625.400.
Inglis, Leslie R., to Vortec Corporation. Flow amplifying nozzle. 4,195,780, Cl. 239-73.000.
Inoko, Michio; Kawatsuji, Shinichi; and Yamagata, Takeshi, to Asahi Kasei Kogyo Kabushiki Kaisha. Process and apparatus for washing photosensitive resin printing plates. 4,196,018, Cl. 134-6.000.
Inooka, Masayoshi; Wakabayashi, Motoyoshi; Matsuda, Masatoshi; Kasuya, Masaaki; Ohguchi, Yoshihoro; Nakamura, Munekazu; and Morimoto, Tatsuo, to Chiyoda Chemical Engineering & Construction Co., Ltd. Catalysts for demetallization treatment of hydrocarbons supported on sepiolite. 4,196,102, Cl. 252-457.000.
Inoue, Shoichi: *See*—
Taniyama, Susumu; Takanohashi, Hiromitsu; and Inoue, Shoichi, 4,196,014, Cl. 106-287.130.
Inouye, Naomitsu: *See*—
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Cessou, Maurice, 4,195,653, Cl. 137-206.000.
Instrumentation Laboratory, Inc.: *See*—
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Intercontinental Marine Limited: *See*—
Higgs, William Y., 4,195,380, Cl. 9-9.000.
International Business Machines Corporation: *See*—
Anantha, Narasipur G.; Bhatia, Harsaran S.; Gaur, Santosh P.; and Pogge, Hans B., 4,196,440, Cl. 357-35.000.
Barclay, Donald J.; and Vigar, James M., 4,196,062, Cl. 204-36.000.
Kelly, Helen J.; Perlman, David J.; and Satya, Akella V. S., 4,196,389, Cl. 324-158.00R.
Malaviya, Shashi D., 4,196,363, Cl. 307-362.000.
Riley, Timothy J.; Vecchiarelli, Nicholas; and Fritz, Richard A., 4,195,892, Cl. 316-20.000.
International Drum Corporation: *See*—
Chase, William L., 4,195,555, Cl. 93-36.800.
International Flavors & Fragrances Inc.: *See*—
Trenkle, Robert W.; Mookherjee, Braja D.; Kasper, Robin; Vock, Manfred H.; Vinals, Joaquin; Kiwala, Jacob; and Schmitt, Frederick L., 4,196,306, Cl. 568-824.000.
International Harvester Company: *See*—
Windecker, Leo J., 4,196,251, Cl. 428-311.000.
International Lead Zinc Research Organization, Inc.: *See*—
Barnes, Clive; and Ward, John J. B., 4,196,063, Cl. 204-43.00R.
International Minerals and Chemical Corporation: *See*—
Jacobs, Martin J., 4,196,295, Cl. 546-232.000.
International Nickel Co., Inc., The: *See*—
Pargeter, John K.; and Ahmad, Umar M. U., 4,196,100, Cl. 252-439.000.
International Paper Company: *See*—
Nehring, John R.; and King, George E., 4,195,633, Cl. 128-276.000.
International Playtex, Inc.: *See*—
DiSalvo, Walter A.; Cubitt, Robert B.; and Coury, Francis J., 4,195,634, Cl. 128-290.00R.
International Standard Electric Corporation: *See*—
Sterling, Henley F.; and Irven, John, 4,195,980, Cl. 65-3.00A.
Interroyal Corporation: *See*—
Benoit, Roland A.; and Guillot, Edmund P., 4,195,578, Cl. 108-144.000.
Intraco, Inc.: *See*—
Jones, Robert D., 4,195,725, Cl. 198-718.000.
Invernizzi, Renzo: *See*—
Ligorati, Ferdinando; Invernizzi, Renzo; Collu, Carlo; and Fontanesi, Maurizio, 4,196,097, Cl. 252-429.00C.
Inzunza, Luis G. G. Apparatus for tanning skins. 4,195,501, Cl. 69-32.000.
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Ishii, Haruo; and Arai, Akihiro, to Asahi Kogaku Kogyo Kabushiki Kaisha. Diaphragm-operating device for use in an interchangeable-lens type camera. 4,195,925, Cl. 354-270.000.
Ishikawa, Kazuhiro, to Iizuka Electric Industry Company Limited. Electric switch. 4,196,328, Cl. 200-246.000.
Ishikawajima-Harima Jukogyo Kabushiki Kaisha: *See*—
Tsuchida, Yutaka, 4,195,684, Cl. 164-416.000.
Isola Fabrikker A/S: *See*—
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Israel, Joseph: *See*—
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Issler, Jorg: *See*—
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Ito, Takamichi: *See*—
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Ito, Toshimitsu: *See*—
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Ito, Tsuneo, to NGK Spark Plug Co., Ltd. Au-Pd-Cr Alloy for spark plug electrodes. 4,195,988, Cl. 75-165.000.
ITT Industries, Inc.: *See*—
Adam, Fritz G., 4,196,441, Cl. 357-41.000.
Haar, Gerhard; and Swoboda, Josef, 4,196,415, Cl. 340-75.000.
ITW Espana, S.a.: *See*—
Llauge, Joaquin R., 4,195,807, Cl. 248-74.00A.
Ives, Kenneth D.; McCartney, Raymond F.; and Shoemaker, Alan K., to United States Steel Corporation. Method of arresting crack propagation in line pipe characterized by ductile fracture. 4,195,669, Cl. 138-178.000.
Ivey, John S.: *See*—
Clauss, Julius A.; Ivey, John S.; and Smirl, Richard L., 4,195,536, Cl. 74-759.000.
Iwai, Tadashi; Kawahito, Takashi; and Yamada, Tetsuo, to Ube Industries, Ltd. Process for producing metallic nitride powder. 4,196,178, Cl. 423-290.000.
Iwakiri, Norio; and Kiyono, Yasuhiro, to Omron Tateisi Electronics, Co. Contactless snap-action photoelectric switch. 4,196,348, Cl. 250-229.000.
Iwao, Noriaki, to Tomy Kogyo Co., Inc. Pop-up cash register. 4,195,423, Cl. 35-30.000.
Iwase, Shigeo, to Taiyo Seisakusho Manufacturing Co., Ltd. Horizontal fish kidney-removing machine. 4,195,387, Cl. 17-58.000.
Iyeta, Motoi; and Baba, Mitsuru, to Nippon Gakki Seizo Kabushiki Kaisha. Pickup arm control system in record player or the like. 4,196,379, Cl. 318-601.000.
Izumi, Kazuo: *See*—
Noguchi, Katsuichi; Maeda, Kazuo; Anzai, Yuriko; Hirai, Minoru; Izumi, Kazuo; and Niijima, Kenji, 4,195,649, Cl. 131-261.00R.
J. Brochier Soieries: *See*—
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J. Ray McDermott & Co., Inc.: *See*—
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Jacobs, Arthur F.: *See*—
Burns, David C.; Shum, Lanson Y.; Reyes, Renato D.; Jacobs, Arthur F.; Morris, Duane W.; and Castner, Raymond P., 4,196,049, Cl. 176-19.00R.
Jacobs, Martin J., to International Minerals and Chemical Corporation. Piperidyl phenyl nitro cyclobutane derivatives. 4,196,295, Cl. 546-232.000.
Jacobson, Norman: *See*—
Pitzer, Charles L.; and Jacobson, Norman, 4,196,089, Cl. 252-42.700.
Jaimee, Angelo: *See*—
Rao, Vemulapalli D. N.; Howes, Benjamin T.; and Jaimee, Angelo, 4,195,478, Cl. 60-282.000.
Jakob, Gert; and Maue, Hans-H., to Robert Bosch GmbH. Electronic system housing structure, particularly for automotive environments. 4,196,467, Cl. 361-399.000.
Jakobsen, Kjell M., to Aktiebolaget Platmanufaktur AB. Apparatus for fastening a stabilizing arrangement on a container. 4,196,039, Cl. 156-580.100.
James River Graphics Inc.: *See*—
Brown, Lee R.; Jose, L. Herrera; and Plumadore, John D., 4,195,991, Cl. 430-55.000.
Janitsch, Anthony D., to Allis-Chalmers Canada Limited. Belt elevator with staggered edge rollers. 4,195,724, Cl. 198-626.000.

Jansa, Wolfgang; Pfeil, Erhard; and Waldhorst, Paul, to DEMAG, Aktiengesellschaft. Jig for tension elements for metallurgic vessels, particularly alternating converters. 4,195,824, Cl. 266-246.000.

Janssen, Lutz; Deutenbach, Klaus-Rainer; Luckoff, Hans-Jochen; and Warnecke, Karl, to Volkswagenwerk Aktiengesellschaft. Vehicle rear window arrangement. 4,195,874, Cl. 296-1.00S.

Janssen Pharmaceutica N.V.: *See—*
Sanczuk, Stefan; and Hermans, Hubert K. Fr., 4,196,210, Cl. 424-267.000.

Japan Tobacco and Salt Public Corp., The: *See—*
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Jarcho, Michael; and Salsbury, Ronald L., to Sterling Drug Inc. Whitlockite ceramic. 4,195,366, Cl. 3-1.900.

Jarvis, Barry M. F., to Exhibition Showplace Services Limited. Modular stand construction system. 4,195,451, Cl. 52-9.000.

Jefferson, John A. Motorcycle ice chest. 4,195,757, Cl. 224-31.000.

Jennings, C. Michael: *See—*
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Jensen, Andrew P.: *See—*
Hickman, John S.; and Jensen, Andrew P., 4,195,456, Cl. 52-208.000.

Jensen, Harbo P., to Chevron Research Company. Process for removing a bisulfite salt from an aqueous solution by chemisorption. 4,196,175, Cl. 423-242.000.

Jenson, Bernard T. Perimeter draft welding hood. 4,195,363, Cl. 2-8.000.

Jespersen, Paul N.: *See—*
Rasmussen, Holger; and Jespersen, Paul N., 4,195,399, Cl. 29-429.000.

Jewett, Charles S.; and Ruzicka, Harry L., to Avco Corporation. Method of fabricating a torque sensor. 4,196,337, Cl. 219-121.0EM.

Jidoshakiki Co., Ltd.: *See—*
Konishi, Hideo, 4,195,706, Cl. 180-132.000.

Jimmy Dean Meat Company, The: *See—*
Bernard, Vincent E., 4,195,489, Cl. 62-63.000.

Johansson, Arne E.: *See—*
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Johns Hopkins University, The: *See—*
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Johnson, Francis; and Kim, Kyoung S., to Research Corporation. Anthracyclines. 4,196,127, Cl. 260-343.30R.

Johnson, Gordon A. Safety earrings for pierced ears. 4,195,492, Cl. 63-12.000.

Johnson, Howard D.; and Snyder, Kenneth J., to Halliburton Company. Removing deposits from surfaces in wood pulp processing apparatus. 4,196,094, Cl. 252-103.000.

Johnson & Johnson: *See—*
Puskadi, Frank, 4,196,254, Cl. 428-341.000.

Johnson, Roy A., to Upjohn Company, The. Prostaglandin derivatives. 4,196,283, Cl. 542-426.000.

Johnson, William H., to Eastman Kodak Company. Photographic film unit. 4,196,000, Cl. 430-207.000.

Johnston, Richard W.; Neuman, John G.; Schroeder, Thaddeus; and Traub, Norman L., to General Motors Corporation. Fuel tank fill tube with a magnetically actuated valve. 4,195,673, Cl. 141-349.000.

Johnston, Ronald J., to Aluma Systems Incorporated. Lifting device. 4,195,873, Cl. 294-106.000.

Joines, William T.; Burton, Larry W.; Rafal, Marc D.; and Spock, Alexander. Spectroscopic analysis of chemical substances. 4,195,641, Cl. 128-632.000.

Joncas, Armand. Ashtray. 4,195,648, Cl. 131-237.000.

Jones, James E.; Temple, Rodger G.; Seiner, Jerome A.; Young, Sharon L.; and Boberski, William G., to PPG Industries, Inc. Semi-solid water-based coating compositions. 4,196,107, Cl. 260-17.00R.

Jones, Robert D., to Intraco, Inc. Drive unit for cable conveyor. 4,195,725, Cl. 198-718.000.

Jones, Robert J.; and O'Rell, Michael K., to TRW Inc. Perfluoroisopropylidene dianhydride and polyimides prepared therefrom. 4,196,277, Cl. 528-208.000.

Jordan, Thomas W.: *See—*
Wagner, George G.; and Jordan, Thomas W., 4,195,896, Cl. 339-18.00B.

Jose, L. Herrera: *See—*
Brown, Lee R.; Jose, L. Herrera; and Plumadore, John D., 4,195,991, Cl. 430-55.000.

Joseph, Douglas C.; and Hartman, Ronald L., to Eastman Kodak Company. Antistatic layer for photographic elements. 4,196,001, Cl. 430-502.000.

Joslyn Mfg. and Supply Co.: *See—*
Newling, Robert P., 4,195,691, Cl. 166-315.000.

Juba, Hisashi, to Minami Internationai Corporation. Multiple fuse device. 4,196,409, Cl. 337-198.000.

Juergens, William A. Draw bead having alternating pressure surfaces and grooves. 4,195,510, Cl. 72-350.000.

Junger, Hans: *See—*
Hoppe, Walter; Junger, Hans; and Weissenfels, Franz, 4,195,458, Cl. 52-234.000.

Jurich, Mike, III. Cleaning apparatus for a revolver. 4,195,381, Cl. 15-104.200.

Kabat, John L., to Honeywell Inc. Expanded time constant condition control system. 4,196,356, Cl. 307-117.000.

Kabushiki Kaisha Suwa Seikosha: *See—*
Chihara, Hiroyuki, 4,196,432, Cl. 340-784.000.
Yamada, Tsutomu, 4,196,349, Cl. 250-231.0SE.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
Miyazaki, Tsutomu; Shimizu, Takeshi; and Onoue, Keiji, 4,195,788, Cl. 242-18.0PW.

Kabushiki Kaisha Yakult Honsha: *See—*
Ozawa, Kazumi; and No, Shinichiro, 4,195,566, Cl. 101-38.00R.

Kai, Hisao; and Yoshimatsu, Tomohiko, to Asahi-Dow Limited. Vacuum suction typed holder for flexible, tube-shaped film materials. 4,195,464, Cl. 53-386.000.

Kai, Osamu: *See—*
Fujie, Hiroshi; Kai, Osamu; Masunaga, Eiji; Sumitani, Etuo; and Shimomai, Akiro, 4,196,118, Cl. 260-45.70P.

Kaiya, Atsushi; Otsuki, Yutaka; and Horii, Hideo, to Nippon Oil Co., Ltd. Water-soluble coating composition. 4,196,112, Cl. 260-23.70M.

Kaiya, Atsushi; Otsuki, Yutaka; and Horii, Hideo, to Nippon Oil Co., Ltd. Water-soluble coating composition. 4,196,113, Cl. 260-23.70M.

Kakizaki, Kimio: *See—*
Fujie, Kunio; Nakayama, Wataru; Kuwahara, Heikichi; Daikoku, Takahiro; and Kakizaki, Kimio, 4,195,688, Cl. 165-133.000.

Kalen, David D.; and Mitchem, Jerry W., to Babcock & Wilcox Company, The. Tubular closure mechanism. 4,195,868, Cl. 292-256.670.

Kalen, David D.: *See—*
Mitchem, Jerry W.; Kalen, David D.; and Klahn, Francis C., 4,196,047, Cl. 176-15.000.

Kalinoski, Richard W.; and Vignos, James H., to Foxboro Company, The. Ultrasonic flowmeter. 4,195,517, Cl. 73-194.00A.

Kama, Haruo: *See—*
Okatani, Masanao; Onishi, Hiroshi; Ishibashi, Yoshiaki; Sato, Reisuke; Suganuma, Hisashi; Yokogawa, Tomohisa; Ueki, Yoshiharu; Kama, Haruo; Kosuga, Tadashi; and Ogawa, Tadashi, 4,196,395, Cl. 455-154.000.

Kamei, Kuniaki: *See—*
Arai, Eisuke; Kamei, Kuniaki; Matushima, Kinji; and Hirakawa, Matsuo, 4,196,033, Cl. 156-196.000.

Kamiguchi, Shu: *See—*
Haraguchi, Yoshifumi; Fukuyama, Hiroshi; and Kamiguchi, Shu, 4,195,413, Cl. 33-169.00B.

Kane, Bernard J.; and Traynor, Sean G., to SCM Corporation. d-Isomenthoxyacetic acid. 4,196,303, Cl. 560-126.000.

Kanerva, Robert A.; and Bailey, James E., to Singer Company, The. Orifice device with safety shut-off for pressure regulators. 4,195,656, Cl. 137-458.000.

Kang, Pierson S., to Chem Par Corporation. Cutting, scoring and embossing die set. 4,195,557, Cl. 93-59.00R.

Kantsedalov, Viktor G.: *See—*
Madoian, Ashot A.; Kantsedalov, Viktor G.; Samoilenko, Petr B.; and Samoilenko, Valentin P., 4,195,529, Cl. 73-638.000.

Kapp, Joachim-Friedrich; Kieslich, Kalus; Laurent, Henry; and Petzoldt, Karl, to Schering Aktiengesellschaft. Novel corticoids. 4,196,203, Cl. 424-242.000.

Karacsonyi, Paul: *See—*
Hertel, Hasso; Curtius, Horst; Feess, Erich; and Karacsonyi, Paul, 4,195,973, Cl. 8-46.000.

Karl Mayer Textilmaschinenfabrik GmbH: *See—*
Mista, Kresimir, 4,195,789, Cl. 242-35.50A.

Karpati, Egon: *See—*
Molnar, Arpad; Felfoldi, Karoly; Bartok, Mihaly; Karpati, Egon; and Szporny, Laszlo, 4,196,206, Cl. 424-250.000.

Kart, Warren E.: *See—*
Toffolon, Roger L.; and Kart, Warren E., 4,196,161, Cl. 264-71.000.

Kartalopoulos, Stamatios V.: *See—*
Raftopoulos, Demetrios D.; and Kartalopoulos, Stamatios V., 4,195,929, Cl. 356-32.000.

Kasajima, Masao; and Magami, Kozo, to Alps Electric Co., Ltd. Variable resistor. 4,196,410, Cl. 338-185.000.

Kashigi, Kazuo: *See—*
Tama, Tomoo; Inaba, Masao; and Kashigi, Kazuo, 4,196,449, Cl. 358-183.000.

Kasper, Robin: *See—*
Trenkle, Robert W.; Mookherjee, Braja D.; Kasper, Robin; Vock, Manfred H.; Vinals, Joaquin; Kiwala, Jacob; and Schmitt, Frederick L., 4,196,306, Cl. 568-824.000.

Kasuya, Masaaki: *See—*
Inooka, Masayoshi; Wakabayashi, Motoyoshi; Matsuda, Masatoshi; Kasuya, Masaaki; Ohguchi, Yoshihoro; Nakamura, Munekazu; and Morimoto, Tatsuo, 4,196,102, Cl. 252-457.000.

Katayama, Akira, to Nippon Kogaku K.K. Device for displaying a photometry condition in a finder of a camera. 4,195,926, Cl. 354-273.000.

Katsumoto, Norio: *See—*
Ikeda, Masahiko; Nakanishi, Mutsuo; and Katsumoto, Norio, 4,196,335, Cl. 219-73.000.

Kaufman, Lance R., to Gentron Corporation. Dual resistor element. 4,196,411, Cl. 338-314.000.

Kaufman, Robert J.: *See—*
Franz, John E.; and Kaufman, Robert J., 4,195,983, Cl. 71-87.000.

Kaufmann, Reinhold: *See—*
Worz, Paul; Kaufmann, Reinhold; Ehrmann, Karl; Issler, Jorg; and Weiss, Gunther, 4,195,611, Cl. 123-148.00D.

Kawabe, Naoshi: *See—*
Takahashi, Hisao; Nomura, Takeshi; Ohara, Yoshitomo; Nakanishi, Hajime; Miwa, Naotaka; Kawabe, Naoshi; Endo, Tomizo; Hozuma, Hiroshi; and Akimoto, Minoru, 4,196,050, Cl. 196-122.000.

Kawahito, Takashi: *See*—
Iwai, Tadashi; Kawahito, Takashi; and Yamada, Tetsuo, 4,196,178, Cl. 423-290.000.
Kawakubo, Yukio: *See*—
Kurosawa, Yukio; Kawakubo, Yukio; and Sugawara, Hiroyuki, 4,196,327, Cl. 200-144.00B.
Kawanami, Shunpei; and Hanyo, Susumu, to Daiichi Koshuha Kogyo Kabushiki Kaisha. Method and apparatus for bending elongated materials. 4,195,506, Cl. 72-8.000.
Kawase, Shoji: *See*—
Azuma, Shizuo; Saiki, Noritsugu; and Kawase, Shoji, 4,196,279, Cl. 528-275.000.
Kawase, Suminosuke; Uchiumi, Yoshihisa; and Nishimura, Shinichi, to Tokyo Kagaku Kikai Kabushiki Kaisha. Binocular microscope with lenses rotatable in the plane of optical axes. 4,195,903, Cl. 350-36.000.
Kawatsuji, Shinichi: *See*—
Inoko, Michio; Kawatsuji, Shinichi; and Yamagata, Takeshi, 4,196,018, Cl. 134-6.000.
Kayamoto, Masami: *See*—
Wilson, Geoffrey R.; and Kayamoto, Masami, 4,196,101, Cl. 252-439.000.
Kazantsev, Vladimir G.: *See*—
Shapiro, Semen V.; Gutin, Leonid I.; Kiyamov, Rinat N.; Okhotnikov, Viktor A.; Roginskaya, Ljubov E.; Kazantsev, Vladimir G.; and Novichkov, Vladimir E., 4,196,468, Cl. 363-75.000.
Keech, Thomas W., Jr.: *See*—
Fasching, George E.; and Keech, Thomas W., Jr., 4,196,417, Cl. 340-151.000.
Keeling, Ralph R.; and Seranne, Michel F., to Illinois Central Gulf Railroad. Admission and egress control structure. 4,195,442, Cl. 49-35.000.
Keep, Henry W., Jr. Railroad switch heater. 4,195,805, Cl. 246-428.000.
Keglewitsch, Josef: *See*—
Chow, Weichien; and Keglewitsch, Josef, 4,195,898, Cl. 339-99.00R.
Keiper Automobiltechnik GmbH & Co. KG: *See*—
Kluting, Bernd; and Holweg, Rainer, 4,195,881, Cl. 297-216.000.
Muhr, Dieter; and Cremer, Heinz P., 4,195,884, Cl. 297-362.000.
Keller, James R.; and Nickerson, William A., to Wood I Systems, Inc. Fabricated wood structural member. 4,195,462, Cl. 52-690.000.
Kellner, Jackson M.; and Alther, George A., to Smith International, Inc. Raise drill having water passages directed toward the roller cutters. 4,195,701, Cl. 175-340.000.
Kellogg, Harlan F. Shelf apparatus with removable door assembly. 4,195,890, Cl. 312-257.00R.
Kellogg, John E., deceased (by Lawson, Marian B. Kellogg and Nancy L., heirs); and by Nagy, Rebecca J., heir, to Lawson, Larry. Fireplace venting system. 4,195,618, Cl. 126-120.000.
Kelly, Benjamin E.: *See*—
Bullock, Jack C.; and Kelly, Benjamin E., 4,195,664, Cl. 137-613.000.
Kelly, Helen J.; Perlman, David J.; and Satya, Akella V. S., to International Business Machines Corporation. Test site for a charged coupled device (CCD) array. 4,196,389, Cl. 324-158.00R.
Kendall, Clarence E., Jr.: *See*—
Moore, Boyd B.; and Kendall, Clarence E., Jr., 4,196,307, Cl. 174-47.000.
Kendall, Larry J.: *See*—
Conover, John C.; and Kendall, Larry J., 4,196,358, Cl. 307-243.000.
Kennedy-Skipton, Henry K., to Imperial Chemical Industries Limited. Aqueous gypsum composition. 4,196,008, Cl. 106-115.000.
Kenney, Donald S.: *See*—
Stein, Robert G.; and Kenney, Donald S., 4,195,984, Cl. 71-94.000.
Kenyon, William G., to Du Pont de Nemours, E. I., and Company. Alkyl phosphate soldering fluxes. 4,196,024, Cl. 148-23.000.
Kern, Fred G. Float position adjustment apparatus for fishing line. 4,195,435, Cl. 43-44.870.
Kestigian, Michael; McClure, Robert E.; and Vaher, Eo, to Sperry Corporation. Magnetic mirror for imparting non-reciprocal phase shift. 4,195,908, Cl. 350-151.000.
Kestner, Mark O. Lattice construction and connecting device therefor. 4,195,942, Cl. 403-13.000.
Keyline Research & Development Corp.: *See*—
Cardamone, Tom, 4,195,728, Cl. 206-45.330.
Khalemsky, Samuil F.: *See*—
Sladkoshteev, Vladimir T.; Shatagin, Oleg A.; Khalemsky, Samuil F.; Sachko, Viktor V.; Abraimov, Boris F.; Manokhin, Anatoly I.; Mishin, Petr P.; Druzhinin, Valery P.; Nechaev, Leonid S.; Kozachenko, Stanislav M.; and Kuchminsky, Jury M., 4,195,685, Cl. 164-420.000.
Kieslich, Kalus: *See*—
Kapp, Joachim-Friedrich; Kieslich, Kalus; Laurent, Henry; and Petzoldt, Karl, 4,196,203, Cl. 424-242.000.
Kiley, Eugene F.: *See*—
Buchanan, William E.; and Kiley, Eugene F., 4,196,474, Cl. 364-461.000.
Kilminster, Kenneth N.; and Holstead, Colin, to Eastman Kodak Company. Compounds which release cyan dyes or dye forming materials. 4,195,993, Cl. 430-225.000.
Kim, Kyoung S.: *See*—
Johnson, Francis; and Kim, Kyoung S., 4,196,127, Cl. 260-343.30R.
Kimata, Kei; Yasuda, Yoshinobu; Kinashi, Ikuo; Matsumoto, Yoshihiro; and Ohshima, Saburo, to NTN Toyo Bearing Company, Limited. Continuously operable fuel injection device. 4,195,814, Cl. 251-205.000.
Kimura, Kaoru: *See*—
Yamada, Akira; and Kimura, Kaoru, 4,196,271, Cl. 525-242.000.
Kimura, Kinichi. Method of making a pouch usable as a cup. 4,196,034, Cl. 156-204.000.
Kinashi, Ikuo: *See*—
Kimata, Kei; Yasuda, Yoshinobu; Kinashi, Ikuo; Matsumoto, Yoshihiro; and Ohshima, Saburo, 4,195,814, Cl. 251-205.000.
King, Frederick D.; and Swiecicki, Tomasz S., to Northern Telecom Limited. Method and apparatus for use in the assembly of optical cables. 4,195,468, Cl. 57-9.000.
King, George E.: *See*—
Nehring, John R.; and King, George E., 4,195,633, Cl. 128-276.000.
Kinney, Lionel L., to Caterpillar Tractor Co. Dynamometer and coupling for a test stand. 4,195,494, Cl. 64-9.00R.
Kip, Harm J.; and Fockens, Tallienco W. H., to N.V. Nederlandsche Apparatenfabriek NEDAP. Detection plate for an identification system. 4,196,418, Cl. 340-152.00T.
Kirchhof, Gunther: *See*—
Stemme, Otto; Kirchhof, Gunther; Lermann, Peter; Stenzenberger, Volkmar; and Theer, Anton, 4,195,924, Cl. 354-197.000.
Kirn, William A.: *See*—
Gehman, David R.; and Kirn, William A., 4,196,190, Cl. 424-47.000.
Kissling, Guenter; and Filser, Erich, to Hochtemperatur-Reaktorbau GmbH. Closure device for pressure vessels. 4,195,457, Cl. 52-224.000.
Kister, Heinz: *See*—
Muller-Spath, Erich; Muller, Konrad; Kister, Heinz; Schurhoff, Walter; Hillnhutter, Friedrich W.; and Laucht, Walter, 4,196,078, Cl. 210-75.000.
Kitasato Institute (Kitasato Kenkyuosho), The: *See*—
Omura, Satoshi; Tanaka, Haruo; Awaya, Juichi; and Hata, Toju, 4,196,266, Cl. 435-125.000.
Kitchen, John P., to Hoover Universal, Inc. Box spring assembly with improved end stiffness. 4,195,376, Cl. 5-255.000.
Kitchen, John P.; and Gabhart, Terry L., to Hoover Universal, Inc. Leg assembly for a bed frame. 4,195,377, Cl. 5-310.000.
Kitchenham, Albert: *See*—
Lamadrid, Rene; Kitchenham, Albert; and Jennings, C. Michael, 4,195,766, Cl. 233-26.000.
Kite, George F., to Philip Morris Incorporated. Process for shredding tobacco stems. 4,195,646, Cl. 131-140.00R.
Kitson, Richard P.; Gilbert, Richard L., Jr.; and Israel, Joseph, to Buckeye Cellulos Corporation. Composite nonwoven fabric comprising adjacent microfine fibers in layers. 4,196,245, Cl. 428-198.000.
Kiwala, Jacob: *See*—
Trenkle, Robert W.; Mookherjee, Braja D.; Kasper, Robin; Vock, Manfred H.; Vinals, Joaquin; Kiwala, Jacob; and Schmitt, Frederick L., 4,196,306, Cl. 568-824.000.
Kiyamov, Rinat N.: *See*—
Shapiro, Semen V.; Gutin, Leonid I.; Kiyamov, Rinat N.; Okhotnikov, Viktor A.; Roginskaya, Ljubov E.; Kazantsev, Vladimir G.; and Novichkov, Vladimir E., 4,196,468, Cl. 363-75.000.
Kiyono, Yasuhiro: *See*—
Iwakiri, Norio; and Kiyono, Yasuhiro, 4,196,348, Cl. 250-229.000.
Klahn, Francis C.; Nolan, John H.; and Wills, Christopher, to Babcock & Wilcox Company, The. Tubular closure device. 4,195,869, Cl. 292-256.670.
Klahn, Francis C.: *See*—
Mitchem, Jerry W.; Kalen, David D.; and Klahn, Francis C., 4,196,047, Cl. 176-15.000.
Klaue, Hermann. Multicylinder two-stroke internal combustion engine with rotary distributor. 4,195,612, Cl. 123-190.0BA.
Klein, Konrad: *See*—
Schulz, Gunter; and Klein, Konrad, 4,195,389, Cl. 19-293.000.
Klein, Schanzlin, & Becker Aktiengesellschaft: *See*—
Augsburger, Rolf; Kuppka, Horst; and Zilling, Helmut, 4,195,655, Cl. 137-340.000.
Kleiner, Hans-Jerg; Dursch, Walter; and Linke, Fritz, to Hoechst Aktiengesellschaft. Bisphosphinic acid anhydrides and process for their preparation. 4,196,141, Cl. 260-545.00P.
Klie, Jurgen, to D. Duesterloh GmbH. Fluid-displacement radial piston machine. 4,195,553, Cl. 91-497.000.
Kling, Philip M.: *See*—
Skaalen, Clifford I.; and Kling, Philip M., 4,195,872, Cl. 294-82.00R.
Klingler, Thomas C.; and Schmidt, Donald L., to Dow Chemical Company, The. Cyclic sulfonium ylids. 4,196,298, Cl. 549-77.000.
Klischat, Ditmar: *See*—
Sehlbach, Gerd; and Klischat, Ditmar, 4,195,495, Cl. 64-17.00R.
Klutchko, Sylvester, to Warner-Lambert Company. Process for the preparation of 3-cyanochromones. 4,196,128, Cl. 260-345.200.
Kluting, Bernd; and Holweg, Rainer, to Keiper Automobiltechnik GmbH & Co. KG. Motor driven reclinable backrest with arresting device. 4,195,881, Cl. 297-216.000.
Knapp, John S., to Federal Laboratories, Inc. Pressurized projectile for delivering and dispensing liquids or particulates. 4,195,572, Cl. 102-90.000.
Knight, Charles J.: *See*—
Avidor, Joel M.; and Knight, Charles J., 4,196,401, Cl. 331-94.50G.
Knoth, Walter H., Jr., to Du Pont de Nemours, E. I., and Company. Ligated transition metal derivatives of heteropolyanions. 4,196,136, Cl. 260-429.700.
Kobayashi, Yoshiro: *See*—
DeLuca, Hector F.; Ikekawa, Nobuo; Tanaka, Yoko; and Kobayashi, Yoshiro, 4,196,133, Cl. 260-397.200.

Kobe Steel, Ltd.: *See*—
Narita, Kiichi; Mori, Takasuke; and Ito, Takamichi, 4,195,823, Cl. 266-233.000.
Kohler, William J.: *See*—
Lustig, Stanley; Vicik, Stephen J.; and Kohler, William J., 4,196,240, Cl. 428-35.000.
Kohler, Wolf-Ulrich; and Lenzen, Clemens, to Maschinenfabrik Buckau R. Wolf Aktiengesellschaft. Washing apparatus for buoyant material. 4,196,019, Cl. 134-104.000.
Kohn, Harold B.: *See*—
Simone, Andre A.; Ogren, Dennis F.; Adams, William R.; and Kohn, Harold B., 4,196,080, Cl. 210-83.000.
Koike, Eishi: *See*—
Watanabe, Katsumi; Shiseki, Yutaka; and Koike, Eishi, 4,195,843, Cl. 274-1.00A.
Koike, Keiichi, to Hitachi, Ltd. Self-hardening water-soluble mold and process for producing the same. 4,196,011, Cl. 106-38.200.
Koike, Masahiko, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument with external sound control function. 4,195,544, Cl. 84-1.190.
Kojima, Tatsuo; and Yamauchi, Kiminori, to Murata Manufacturing Co., Ltd. Rotary switch. 4,196,324, Cl. 200-11.0DA.
Koko, Marie H.: *See*—
Connery, Thomas J., deceased; and Connery, Ruth, executrix, 4,195,630, Cl. 128-159.000.
Koko, Patricia Connery: *See*—
Connery, Thomas J., deceased; and Connery, Ruth, executrix, 4,195,630, Cl. 128-159.000.
Kolbl, Heinz: *See*—
Wildner, Horst; Kolbl, Heinz; and Zachmeier, Alois, 4,195,541, Cl. 83-577.000.
Koltse, John G. Apparatus and method for continuous plating bath treatment system. 4,196,083, Cl. 210-193.000.
Komendant, August E. Modular, multi-floor building. 4,195,453, Cl. 52-79.130.
Komeya, Katsutoshi: *See*—
Watanabe, Masayuki; Komeya, Katsutoshi; and Nakajima, Masahiro, 4,196,171, Cl. 422-246.000.
Kommanditbolaget United Stirling (Sweden) AB & Co.: *See*—
Bratt, Jan C.; and Moodysson, Bengt-Ove M., 4,195,613, Cl. 123-192.00B.
Rosenqvist, Nils K. G., 4,195,554, Cl. 92-146.000.
Kondo, Isao, to Olympus Optical Co., Ltd. Photographic flashlight apparatus. 4,196,458, Cl. 362-10.000.
Konig, Klaus: *See*—
Schreckenberg, Manfred; Konig, Klaus; Freitag, Dieter; and Serini, Volker, 4,196,276, Cl. 528-176.000.
Konishi, Hideo, to Jidoshakiki Co., Ltd. Power steering valve system. 4,195,706, Cl. 180-132.000.
Koppers Company, Inc.: *See*—
Becker, Joseph, Jr.; and McClelland, Ronald O., 4,196,054, Cl. 202-227.000.
McClure, Lawrence M., 4,196,471, Cl. 364-426.000.
Koprowski, Hilary; Gerhard, Walter U.; and Croce, Carlo M., to Wistar Institute, The. Method of producing antibodies. 4,196,265, Cl. 435-2.000.
Korb, Josef; Sprakel, Karl J.; and Muller, Friedrich A. Process for treating surfaces by means of a jet of liquid. 4,195,450, Cl. 51-319.000.
Korstrask Mekaniska, G. Naslund: *See*—
Naslund, Gustav, 4,195,511, Cl. 72-384.000.
Kosuga, Tadashi: *See*—
Okatani, Masanao; Onishi, Hiroshi; Ishibashi, Yoshiaki; Sato, Reisuke; Suganuma, Hisashi; Yokogawa, Tomohisa; Ueki, Yoshiharu; Kama, Haruo; Kosuga, Tadashi; and Ogawa, Tadashi, 4,196,395, Cl. 455-154.000.
Kothe, Wilfried; and Grunwald, Wolfgang, to BASF Aktiengesellschaft. Desizing and bleaching of textile goods. 4,195,974, Cl. 8-138.000.
Kotski, Edward J., to Amerace Corporation. Electrical connector and electrical connection system employing the same. 4,195,894, Cl. 339-14.00R.
Koulbanis, Constantin: *See*—
Boelle, Jean-Paul; Koulbanis, Constantin; and Zabotto, Arlette, 4,196,201, Cl. 424-180.000.
Kozachenko, Stanislav M.: *See*—
Sladkoshteev, Vladimir T.; Shatagin, Oleg A.; Khalemsky, Samuil F.; Sachko, Viktor V.; Abraimov, Boris F.; Manokhin, Anatoly I.; Mishin, Petr P.; Druzhinin, Valery P.; Nechaev, Leonid S.; Kozachenko, Stanislav M.; and Kuchminsky, Jury M., 4,195,685, Cl. 164-420.000.
Kraft, Eckhard; and Lunneman, Volker, to Motoren- und Turbinen-Union Munchen GmbH. Arrangement for reducing gap losses in the adjustable guide vanes of fluid flow machines, particularly gas turbine engines. 4,195,964, Cl. 415-160.000.
Kramer, Dale C. Toy flying object. 4,195,439, Cl. 46-79.000.
Kranz, Eckart; Schubart, Rudiger; Schwarz, Herbert; Siegle, Peter; and Steude, Heinrich, to Bayer Aktiengesellschaft. 1-Chloro-3,3-dimethyl-butan-2-one. 4,196,150, Cl. 260-593.00H.
Krasnik, Matthaus. Device for collecting honey and comb honey package. 4,195,379, Cl. 6-11.000.
Krass, Dennis K., to PPG Industries, Inc. 1-(3-Methyl-5-isothiazolyl)-3-methoxy-3-methylurea. 4,196,126, Cl. 548-214.000.
Kraus, Werner. Long-term endoprosthesis. 4,195,367, Cl. 3-1.910.
Krauss u. Reichert GmbH & Co. KG Spezialmaschinenfabrik: *See*—
Schweitzer, Walter, 4,195,404, Cl. 30-139.000.
Kreuer, Dieter: *See*—
Ebeling, Wilfried; Schulte, Klaus; and Kreuer, Dieter, 4,195,527, Cl. 73-434.000.
Krolak, Ronald F.: *See*—
Radloff, Frederick J.; and Krolak, Ronald F., 4,195,899, Cl. 339-103.00M.
Krumrey, Guenter, to Siemens Aktiengesellschaft. X-ray photographic apparatus. 4,195,832, Cl. 271-274.000.
Kubat, Josef; Hedman, Kaj B.; and Albihn, Per L. Recovery of polystyrene using liquid sulfur dioxide. 4,196,105, Cl. 260-2.300.
Kuchminsky, Jury M.: *See*—
Sladkoshteev, Vladimir T.; Shatagin, Oleg A.; Khalemsky, Samuil F.; Sachko, Viktor V.; Abraimov, Boris F.; Manokhin, Anatoly I.; Mishin, Petr P.; Druzhinin, Valery P.; Nechaev, Leonid S.; Kozachenko, Stanislav M.; and Kuchminsky, Jury M., 4,195,685, Cl. 164-420.000.
Kudla, John: *See*—
Chilton, George E.; and Kudla, John, 4,195,871, Cl. 294-16.000.
Kuhl, Eberhard. Control system for a plurality of elevators. 4,195,712, Cl. 187-29.00R.
Kuhn, Werner, to Gesellschaft fur Kernforschung m.b.H. Regulation of a plurality of superconducting resonators. 4,196,398, Cl. 331-9.000.
Kullman, Russell M. H.: *See*—
Frank, Arlen W.; Daigle, Donald J.; and Kullman, Russell M. H., 4,196,149, Cl. 260-583.00E.
Kumar, Anand, to Technicon Instruments Corporation. Ion selective electrode analysis. 4,196,056, Cl. 204-1.00T.
Kuniya, Keiichi; Arakawa, Hideo; Maeda, Kunihiro; and Morita, Keiichi, to Hitachi, Ltd. Semiconductor device. 4,196,442, Cl. 357-67.000.
Kuniyoshi, Yasunobu: *See*—
Okada, Takashi; Kuniyoshi, Yasunobu; and Tominaga, Kiyonori, 4,196,445, Cl. 358-8.000.
Kuo, Joseph S. C., to American Cyanamid Company. Combined *Haemophilus influenzae* type b and pertussis vaccine. 4,196,192, Cl. 424-92.000.
Kupperman, Dennis: *See*—
Kupperman, Sam; and Kupperman, Dennis, 4,195,707, Cl. 181-138.000.
Kupperman, Sam; and Kupperman, Dennis, to RB Toy Development Co. Communicating device. 4,195,707, Cl. 181-138.000.
Kuppka, Horst: *See*—
Augsburger, Rolf; Kuppka, Horst; and Zilling, Helmut, 4,195,655, Cl. 137-340.000.
Kureha Kagaku Kogyo Kabushiki Kaisha: *See*—
Enomoto, Satoru; Wada, Hisayuki; Nishita, Sadao; Mukaida, Yutaka; Yanaka, Mikiro; and Takita, Hitoshi, 4,196,135, Cl. 260-429.00R.
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Kurmeier, Hans-Adolf: *See*—
Gante, Joachim; Kurmeier, Hans-Adolf; Orth, Dieter; Schacht, Erich; and Wild, Albrecht, 4,196,215, Cl. 424-308.000.
Kurosawa, Yukio; Kawakubo, Yukio; and Sugawara, Hiroyuki, to Hitachi, Ltd. Vacuum interrupter. 4,196,327, Cl. 200-144.00B.
Kurose, Nancy S.; and Zweig, Arnold, to American Cyanamid Company. Processes for separating of enantiomers by crystallization. 4,196,297, Cl. 548-320.000.
Kuwagaki, Hiroshi; Hishida, Tadanori; Yano, Kohzo; and Inami, Yasuhiko, to Sharp Kabushiki Kaisha. Four-layer display electrode in an electrochromic display. 4,195,917, Cl. 350-357.000.
Kuwahara, Heikichi: *See*—
Fujie, Kunio; Nakayama, Wataru; Kuwahara, Heikichi; Daikoku, Takahiro; and Kakizaki, Kimio, 4,195,688, Cl. 165-133.000.
Kuze, Yoshikazu. Machine controller. 4,196,344, Cl. 235-92.0CT.
Kyriacou, Nestor E. Vehicle suspension. 4,195,859, Cl. 280-112.00R.
Laboratoires Pharmascience: *See*—
Rancurel, Alain; and Grenier, Georges, 4,196,217, Cl. 424-316.000.
Lackey, Gillam B. Scribe knife. 4,195,406, Cl. 30-164.900.
Laganis, Deno; and Garis, Eric V., to Schenectady Chemicals, Inc. Phenolic resin-triazine modifier for alkyd resins. 4,196,109, Cl. 260-20.000.
Lagarde, Pierre, to Metalimphy. Method of identifying articles. 4,195,771, Cl. 235-380.000.
Lalikos, James M.; Waite, Harold K.; and Lefebvre, Kenneth E., to Titeflex Corporation. Method of making a preformed semirigid plastic hose wrapped with a wire spiral. 4,196,031, Cl. 156-143.000.
Lamadrid, Rene; Kitchenham, Albert; and Jennings, C. Michael, to Baxter Travenol Laboratories, Inc. Latch assembly for latching platens in place within a centrifuge device. 4,195,766, Cl. 233-26.000.
Lambert, Lloyd J., Jr. Vertical shoulder and lateral shoulder exercise machine. 4,195,834, Cl. 272-118.000.
Lambertz, Hans-Reinhard. Bearing arrangement for roller bodies in compacting rollers. 4,195,947, Cl. 404-117.000.
Lammi, Unto T.: *See*—
Salokangas, Teuvo T.; Lammi, Unto T.; and Miettinen, Tapani J., 4,196,082, Cl. 210-180.000.
Landry, Archie C.: *See*—
Daswick, Alexander C.; and Landry, Archie C., 4,195,882, Cl. 297-242.000.
Lanham Manufacturing Co., Inc.: *See*—
Lanham, Roy S., 4,195,427, Cl. 37-90.000.
Lanham, Roy S., to Lanham Manufacturing Co., Inc. Chain trencher. 4,195,427, Cl. 37-90.000.

Lansing Bagnall Limited: *See*—
Goodacre, Stephen P., 4,195,858, Cl. 280-95.00R.
Lapidus, Herbert, to Combe Incorporated. Aqueous-based hair dyeing composition containing a soluble bismuth salt and a reducing compound. 4,195,972, Cl. 8-10.100.
Lars Collin Consult AB: *See*—
Collins, Lars T., 4,195,514, Cl. 73-116.000.
Larson, Thomas A.; Verhoff, Donald H.; and Blank, Wallace J., to Oshkosh Truck Corporation. High lift tag axle load transfer system. 4,195,856, Cl. 280-81.00R.
Laser Analytics, Inc.: *See*—
Butler, Jack F.; and Nill, Kenneth W., 4,196,402, Cl. 331-94.50C.
Lasiter, David N.: *See*—
Boner, John O.; Lasiter, David N.; and Wilson, Joseph H., 4,195,734, Cl. 206-558.000.
Laskowski, Gordon J.; and Schrick, Richard I., to United States of America, Navy. Platform loading system. 4,195,962, Cl. 414-659.000.
Laspo AG: *See*—
Budmiger, Hermann, 4,195,422, Cl. 35-25.000.
Laucht, Walter: *See*—
Muller-Spath, Erich; Muller, Konrad; Kister, Heinz; Schurhoff, Walter; Hillnhutter, Friedrich W.; and Laucht, Walter, 4,196,078, Cl. 210-75.000.
Laurence, David F.: *See*—
May, Walter R.; Zetlmeisl, Michael J.; and Laurence, David F., 4,196,057, Cl. 204-1.00T.
Laurent, Henry: *See*—
Kapp, Joachim-Friedrich; Kieslich, Kalus; Laurent, Henry; and Petzoldt, Karl, 4,196,203, Cl. 424-242.000.
Lavering, Gordon R.: *See*—
Roberts, Roy D.; and Lavering, Gordon R., 4,195,745, Cl. 220-2.200.
Lavin, Aaron M. Pinch valve. 4,195,810, Cl. 251-5.000.
Lavon, Erik V., to Atlas Copco AB. Method and device for breaking a hard compact material. 4,195,885, Cl. 299-1.000.
Lawlor, Larry L.: *See*—
Hunter, James B.; McGuire, George; D'Alessandro, A. F.; and Lawlor, Larry L., 4,196,099, Cl. 252-437.000.
Lawrence, Ernest R.; and Bradley, Thomas L., to Frean, Robert George. Harvesting machines. 4,195,467, Cl. 56-296.000.
Lawson, Larry: *See*—
Kellogg, John E., deceased; and Nagy, Rebecca J., heir, 4,195,618, Cl. 126-120.000.
Lawson, Marian B. Kellogg and Nancy L., heirs: *See*—
Kellogg, John E., deceased; and Nagy, Rebecca J., heir, 4,195,618, Cl. 126-120.000.
Le Dily, legal representative, by Josephine: *See*—
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Le Materiel Telephonique: *See*—
Bougon, Pierre P. A.; Parmentier, Alain R. A.; and Weiss, Pierre M., 4,195,911, Cl. 350-171.000.
Lea, Frank: *See*—
Dean, Noel S.; and Lea, Frank, 4,195,906, Cl. 350-96.230.
Lecacheur, Jean-Claude: *See*—
Auclair, Michel; Lecacheur, Jean-Claude; and Le Parmentier, Louis, 4,195,779, Cl. 239-8.000.
Le Dily, Claude, deceased; Le Dily, legal representative, by Josephine; and Faye, Jean-Claude, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Self-correcting equalization system. 4,196,405, Cl. 333-16.000.
Lee, Denis C. External breast prosthesis. 4,195,639, Cl. 128-481.000.
Lee, Ernest P., to Honeywell Information Systems Inc. Synchronous raster scan apparatus for display device. 4,196,431, Cl. 340-749.000.
Leeker, Jurgen; Becker, Hanjorg; and Rombach, Rudolf, to Rheinmetall GmbH. Sub-caliber projectile of arrow-shaped form having a resistance-stabilizing tail section. 4,195,573, Cl. 102-92.700.
Lefebvre, Jacques: *See*—
Patrie, Jos; Lefebvre, Jacques; and Boddele, Dominique, 4,196,060, Cl. 204-28.000.
Lefebvre, Kenneth E.: *See*—
Lalikos, James M.; Waite, Harold K.; and Lefebvre, Kenneth E., 4,196,031, Cl. 156-143.000.
Leffer, Elissa. Dessert cutter. 4,195,402, Cl. 30-114.000.
Lehmann, Roger W., to Aurora Products Corporation. Model vehicle race track. 4,195,776, Cl. 238-10.00F.
Leinfelt, Karl E., to Aktiebolaget Electrolux. Vacuum cleaner device. 4,195,383, Cl. 15-339.000.
Leitz, Ludwig; and Heitmann, Knut, to Ernst Leitz Wetzlar GmbH. System for measuring position and/or velocity. 4,195,425, Cl. 356-28.000.
Lemaire, Francis: *See*—
Gaussens, Gilbert; and Lemaire, Francis, 4,196,065, Cl. 204-159.170.
Le Metais, Claude: *See*—
Chastanier, Roger A. H., 4,195,819, Cl. 254-186.00R.
Lennox, Thomas J., Jr., to United States of America, Navy. Method of determining the presence of stray electrical currents in a solution. 4,196,055, Cl. 204-1.00T.
Lenzen, Clemens: *See*—
Kohler, Wolf-Ulrich; and Lenzen, Clemens, 4,196,019, Cl. 134-104.000.
Le Parmentier, Louis: *See*—
Auclair, Michel; Lecacheur, Jean-Claude; and Le Parmentier, Louis, 4,195,779, Cl. 239-8.000.
Lermann, Peter; Wagner, Karl; and Engelsmann, Dieter, to AGFA-Gevaert, A.G. Photographic apparatus with means for differently indicating the intensity of scene light for differently sensitive films. 4,195,921, Cl. 354-21.000.
Lermann, Peter: *See*—
Stemme, Otto; Kirchhof, Gunther; Lermann, Peter; Stenzenberger, Volkmar; and Theer, Anton, 4,195,924, Cl. 354-197.000.
Lesick, Alvin B. Portable bidet attachment. 4,195,369, Cl. 4-7.000.
Letort, Claude A.: *See*—
Llop, Helenio; and Letort, Claude A., 4,195,412, Cl. 33-169.00R.
Leveckis, Algis S.; and August, Gerald, to Procter & Gamble Company, The. Microwave energy cooking bag. 4,196,331, Cl. 219-10.55E.
Lever Brothers Company: *See*—
Clarke, David E.; Davies, James F.; Tune, John B.; and Wilde, Raymond J., 4,196,093, Cl. 252-99.000.
Levinson, Steven R.; and Adin, Anthony, to Eastman Kodak Company. Photothermographic element containing heat sensitive dye materials. 4,196,002, Cl. 430-617.000.
Levkoff, Henry S.; and Falco, Alphonse, to Standard Folding Cartons, Inc. Loading platform and method for transferring sheets of material. 4,195,963, Cl. 414-786.000.
Lewellyn, Morris E.: *See*—
Wang, Samuel S.; Lewellyn, Morris E.; and Smith, Eugene L., Jr., 4,196,092, Cl. 252-61.000.
Lewis, Alan E., to Eastman Kodak Company. Sloped tray arrangement for polymerization reactor. 4,196,168, Cl. 422-134.000.
Lewis, George E., to Hydril Company. High capacity pulsation dampener or surge absorber. 4,195,668, Cl. 138-30.000.
Li, Charles T., to United States of America, Energy. Process for purifying geothermal steam. 4,196,183, Cl. 423-573.00G.
Lichty, William R.; Ferrer, John J.; Cook, Lacy G.; and Ernstoff, Michael N., to Hughes Aircraft Company. Liquid crystal image projector system. 4,195,915, Cl. 350-345.000.
Ligorati, Ferdinando; Invernizzi, Renzo; Collu, Carlo; and Fontanesi, Maurizio, to Euteco S.p.A. Ziegler catalysts. 4,196,097, Cl. 252-429.00C.
Lilburn, Jennifer E., to Chevron Research Company. Hydrocarbyl-poly(oxyalkylene) aminophosphorylamido esters and lubricating oil compositions containing the esters. 4,196,090, Cl. 252-49.900.
Lincoln Brass Works, Inc.: *See*—
Blanzy, Eugene J., 4,195,785, Cl. 239-566.000.
Lindlau, Paul F., to Amerace Corporation. Electrical device with terminal retainer. 4,195,901, Cl. 339-198.0GA.
Lindner, Robert G.: *See*—
Anderson, John W.; and Lindner, Robert G., 4,195,460, Cl. 52-528.000.
Lindqvist, Bengt-Erik; and Spetz, Harald K. Methods and apparatus for spreading semi-liquid compositions on a base surface. 4,196,235, Cl. 427-356.000.
Lindsay, Harold W. Holder for pin-type replaceable cutting inserts. 4,195,955, Cl. 407-40.000.
Link, Edwin A., to RTE Corporation. High temperature transformer assembly. 4,196,408, Cl. 336-94.000.
Linke, Fritz: *See*—
Kleiner, Hans-Jerg; Dursch, Walter; and Linke, Fritz, 4,196,141, Cl. 260-545.00P.
Liska, Zbynek, to Adamovske strojirny, narodni podnik. Device for the circumferential adjustment of a form cylinder. 4,195,569, Cl. 101-248.000.
List, Dr. Dr. Hans, Prof.: *See*—
Fredericks, George, 4,195,516, Cl. 73-194.00M.
Litton Industrial Products, Inc.: *See*—
Stager, Francis W., 4,195,815, Cl. 251-306.000.
Livings, Rodney; and Bosiacki, Richard J., to Thorn Domestic Appliances (Electrical) Limited. Air driers and control circuits therefor. 4,195,415, Cl. 34-48.000.
Llauge, Joaquin R., to ITW Espana, S.a. Retaining clip for elongated members. 4,195,807, Cl. 248-74.00A.
Llop, Helenio; and Letort, Claude A., to Societe d'Optique, Precision Electronique et Mecanique Sopelem. Installation for controlling the position of a movable part. 4,195,412, Cl. 33-169.00R.
Lo, Grace Y-S: *See*—
Tung, Lu H.; and Lo, Grace Y-S, 4,196,153, Cl. 260-665.00R.
Tung, Lu H.; Lo, Grace Y-S.; and Beyer, Douglas E., 4,196,154, Cl. 260-665.00R.
Lobeck, Walter G., Jr.: *See*—
Wu, Yao H.; and Lobeck, Walter G., Jr., 4,196,212, Cl. 424-275.000.
Lockett, William L.: *See*—
DuBois, Jean-Pierre; and Lockett, William L., 4,195,560, Cl. 99-422.000.
Lockwood Technical, Inc.: *See*—
Slautterback. Fred A.; and Honeyman, R. Blakeley, 4,195,755, Cl. 222-146.0HE.
Loeffler, Thomas V., to Diamond International Corporation. Egg grading system. 4,195,736, Cl. 209-516.000.
Loewenthal, Horst, to SIG - Schweizerische Industrie-Gesellschaft. Conveyor system with article separator. 4,195,723, Cl. 198-461.000.
Lohmann, Dieter: *See*—
Bitzer, Diethelm; and Lohmann, Dieter, 4,196,233, Cl. 427-249.000.
Lonza Ltd.: *See*—
Hardt, Peter, 4,196,287, Cl. 544-124.000.
Lopez, Hugo A., to Zenith Radio Corporation. Rewetting solution and method for aluminizing image display faceplates. 4,196,015, Cl. 106-287.240.
L'Oreal: *See*—
Boelle, Jean-Paul; Koulbanis, Constantin; and Zabotto, Arlette, 4,196,201, Cl. 424-180.000.

Lotteau, Jacques: *See—*
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Louverdrape, Inc.: *See—*
Hyman, David L.; Cayton, Robert J.; and Rosenquist, Kurt E., 4,195,680, Cl. 160-166.00A.
Lowdermilk, Robert S.: *See—*
Hornak, Steven S.; Lowdermilk, Robert S.; and Miller, Robert A., 4,196,020, Cl. 134-167.00R.
Lubitzsch, Wolfgang; and Gelhaus, Joachim, to Dragerwerk Aktiengesellschaft. Deep sea diving system having a closed respiratory gas circulation system. 4,195,628, Cl. 128-201.270.
Lucas Industries Limited: *See—*
Boxer, Trevor C., 4,196,377, Cl. 318-269.000.
Luchaco, David G., to Bendix Corporation, The. Speed sensitive electronic fuel control system for an internal combustion engine. 4,195,599, Cl. 123-32.0EA.
Luchinger, Hanspeter; Snedkerud, Ole; and Wyss, Jurg, to BBC Brown Boveri & Company Limited. Method and apparatus for monitoring and controlling the anode dissipation of transmitters. 4,196,392, Cl. 455-117.000.
Luckoff, Hans-Jochen: *See—*
Janssen, Lutz; Deutenbach, Klaus-Rainer; Luckoff, Hans-Jochen; and Warnecke, Karl, 4,195,874, Cl. 296-1.00S.
Ludwig, Gary R.; and Arendt, Rudy H., to Calspan Corporation. Stall control apparatus for axial flow compressors. 4,196,472, Cl. 364-431.000.
Lummus Company, The: *See—*
Simone, Andre A.; Ogren, Dennis F.; Adams, William R.; and Kohn, Harold B., 4,196,080, Cl. 210-83.000.
Lundberg, Robert D.; and Makowski, Henry S. Fabrication multiphase plastics from liquid suspension. 4,196,236, Cl. 427-374.00B.
Lundin, Earl A. Earthworking implement with open center frame section. 4,195,696, Cl. 172-451.000.
Lunneman, Volker: *See—*
Kraft, Eckhard; and Lunneman, Volker, 4,195,964, Cl. 415-160.000.
Lustig, Stanley; Vicik, Stephen J.; and Kohler, William J., to Union Carbide Corporation. Heat shrinkable multilayer packaging film of blended copolymers and elastomers. 4,196,240, Cl. 428-35.000.
Lutz, Albert W.; and Diehl, Robert E., to American Cyanamid Company. 2-Chloro-n-isopropyl-3,5-disubstituted or 3,4,5-trisubstitutes lower alkyl acetanilides as herbicidal agents. 4,196,142, Cl. 260-562.00B.
Lutz, Andre: *See—*
Heymes, Rene; and Lutz, Andre, 4,196,205, Cl. 424-246.000.
Lux, Hans W.; and Willenbacher, Erich, to Pfaff Industriemaschinen GmbH. Guiding device for sewing material. 4,195,830, Cl. 271-8.00R.
Lyman, Richard G. Conduit cutter. 4,195,827, Cl. 269-2.000.
Lynch Communication Systems, Inc.: *See—*
Decoursey, Calvin H.; and Townsend, Todd V., 4,196,421, Cl. 340-347.0AD.
Townsend, Todd V., 4,196,320, Cl. 179-170.00J.
Lynch, Richard W., to Olin Corporation. Recovery of waste streams containing recoverable chlorine. 4,196,140, Cl. 260-453.00R.
Maasen, Wilhelm: *See—*
Reiners, Franz-Josef; and Maasen, Wilhelm, 4,195,790, Cl. 242-37.00R.
Mac Valves, Inc.: *See—*
Neff, James A., 4,195,552, Cl. 91-443.000.
MacKay B, Alejandro; Tinga, Wayne R.; and Voss, Walter A. G., to Canadian Patents and Development Limited. Controlled heating microwave ovens. 4,196,332, Cl. 219-10.55B.
Macken, John A. Combined photograph holder and storage device. 4,195,729, Cl. 206-45.340.
MacNeille, Stephen M., to United States of America, Navy. Optical fuze. 4,195,574, Cl. 102-213.000.
Macpherson, Robert B., to Anderson Company of Indiana, The. Removable plastic connector. 4,195,382, Cl. 15-250.320.
Madden, Michael J., to Pacific Oil Marketing Equipment Company. Protective hood for a vapor recovery nozzle. 4,195,674, Cl. 141-392.000.
Madoian, Ashot A.; Kantsedalov, Viktor G.; Samoilenko, Petr B.; and Samoilenko, Valentin P. Device for moving the pickups of a flaw detection system through a pipeline. 4,195,529, Cl. 73-638.000.
Madsen, Rud F.: *See—*
Vestergaard, Peter; Moller, Gunther; and Madsen, Rud F., 4,196,385, Cl. 324-58.50B.
Maeda, Kazuo: *See—*
Noguchi, Katsuichi; Maeda, Kazuo; Anzai, Yuriko; Hirai, Minoru; Izumi, Kazuo; and Niijima, Kenji, 4,195,649, Cl. 131-261.00R.
Maeda, Kunihiro: *See—*
Kuniya, Keiichi; Arakawa, Hideo; Maeda, Kunihiro; and Morita, Keiichi, 4,196,442, Cl. 357-67.000.
Maeda, Takao: *See—*
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Maehashi, Yukio, to Nippon Electric Co., Ltd. Clear signal generator circuit. 4,196,362, Cl. 307-350.000.
Magami, Kozo: *See—*
Kasajima, Masao; and Magami, Kozo, 4,196,410, Cl. 338-185.000.
Magee, Philip S., to Chevron Research Company. Algicidal and fungicidal 1-halo-2-substituted-thioethyl sulfones, 2-substituted-thiovinyl sulfones, and 1,2-dihalothioethyl sulfones. 4,196,152, Cl. 260-609.00E.
Magic Chef, Inc.: *See—*
Squire, Herbert D., 4,195,888, Cl. 312-214.000.
Maginness, Maxwell G.: *See—*
Miller, Armin; and Maginness, Maxwell G., 4,196,450, Cl. 358-256.000.
Maglificio Biellese Fratelli Fila S.p.A.: *See—*
Rolando, Pierluigi, 4,195,362, Cl. 2-2.000.
Mahoney, Lee R., to Ford Motor Company. Hydrolysis of polyurethane foams. 4,196,148, Cl. 260-582.000.
Maine, Gayle J., to Shielding, Inc. Radiation shield vest and skirt. 4,196,355, Cl. 250-516.000.
Makowski, Henry S.: *See—*
Lundberg, Robert D.; and Makowski, Henry S., 4,196,236, Cl. 427-374.00B.
Malaviya, Shashi D., to International Business Machines Corporation. Open collector bit driver/sense amplifier. 4,196,363, Cl. 307-362.000.
Manabe, Harukazu: *See—*
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Manitowoc Company, Inc., The: *See—*
Beduhn, Daniel E.; and Morrow, James G., Sr., 4,195,740, Cl. 212-66.000.
Manno, Joseph T.: *See—*
Scopetti, Frank A.; Vaughn, Eric; and Manno, Joseph T., 4,195,617, Cl. 126-5.000.
Manokhin, Anatoly I.: *See—*
Sladkoshteev, Vladimir T.; Shatagin, Oleg A.; Khalemsky, Samuil F.; Sachko, Viktor V.; Abraimov, Boris F.; Manokhin, Anatoly I.; Mishin, Petr P.; Druzhinin, Valery P.; Nechaev, Leonid S.; Kozachenko, Stanislav M.; and Kuchminsky, Jury M., 4,195,685, Cl. 164-420.000.
Mansfield, H. Vaughn: *See—*
Haley, Jack R.; Smith, Jimmy B.; and Mansfield, H. Vaughn, 4,196,051, Cl. 201-24.000.
Mansukhani, Ishwar R., to Whittaker Corporation. Jet printing ink. 4,196,006, Cl. 106-22.000.
Mansukhani, Ishwar R., to Whittaker Corporation. Jet printing ink. 4,196,007, Cl. 106-22.000.
Mantey, Paul G.: *See—*
Brotzmann, Karl; and Mantey, Paul G., 4,196,159, Cl. 264-29.100.
Manzke, Klaus; Hammerschmitt, Peter; and Uhl, Karl, to BASF Aktiengesellschaft. Magnetic head pivotal support with compact drive means. 4,196,456, Cl. 360-106.000.
Marchese, Vincent P.: *See—*
Corrado, Anthony P.; Marchese, Vincent P.; Morici, Frank S.; and Timte, Frank W., 4,195,811, Cl. 251-30.000.
Marjoram, Ernest B.: *See—*
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Mark-Tex Corporation: *See—*
Barlow, Sidney D., 4,195,941, Cl. 401-214.000.
Martin, Charles F. Apparatus for connecting tubular members. 4,195,865, Cl. 285-18.000.
Martin, James W.; and Hardwick, John R., to Butler Manufacturing Company. Knock-down starting platform for a roof seaming machine. 4,195,586, Cl. 113-54.00R.
Martin, Jerry R.: *See—*
Tadanier, John S.; and Martin, Jerry R., 4,196,197, Cl. 424-180.000.
Martin, Joseph E. Partial piloting, lift propelling and propelling system. 4,195,801, Cl. 244-16.000.
Martin, Michael D., to Phillips Petroleum Company. Liquefaction of high pressure gas. 4,195,979, Cl. 62-26.000.
Martin, Thomas W.; and Sandhu, M. Akram, to Eastman Kodak Company. Color imaging devices having integral color filter arrays. 4,196,009, Cl. 430-7.000.
Martin, William D. Gas laser chemical pump fluidization. 4,196,400, Cl. 331-94.50G.
Marvin Glass & Associates: *See—*
Tucker, James E.; and Meyer, Burton C., 4,195,421, Cl. 35-22.00A.
Marx, Paul: *See—*
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Maryland Cup Corporation: *See—*
Stokkers, Henk, 4,195,465, Cl. 53-443.000.
Masaie, Kimio; and Murata, Yoshio, to Murata Manufacturing Co., Ltd. Piezoelectric ceramic filter. 4,196,407, Cl. 333-191.000.
Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft (M.A.N.): *See—*
Fischer, Hermann, 4,195,568, Cl. 101-216.000.
Maschinenfabrik Buckau R. Wolf Aktiengesellschaft: *See—*
Kohler, Wolf-Ulrich; and Lenzen, Clemens, 4,196,019, Cl. 134-104.000.
Masnik, Walter. Ram pump flowmeter. 4,195,965, Cl. 415-213.00R.
Massachusetts Institute of Technology: *See—*
Pratt, George W., Jr., 4,195,643, Cl. 128-779.000.
Massing, Lyle E., to Bendix Corporation, The. Piston and extensible cylinder therefor. 4,195,714, Cl. 188-71.500.
Masunaga, Eiji: *See—*
Fujie, Hiroshi; Kai, Osamu; Masunaga, Eiji; Sumitani, Etuo; and Shimomai, Akiro, 4,196,118, Cl. 260-45.70P.
Matej, Ronald J., to Prutton Corporation. Adjustably timed thread roll machine. 4,195,508, Cl. 72-93.000.
Mathews, Gerald A., to Beloit Corporation. Dryer drum with magnetic spoiler bars. 4,195,417, Cl. 34-110.000.
Mathues, Thomas P.; and Parker, Donald L., to General Motors Corporation. Dual power brake booster. 4,195,484, Cl. 60-547.00R.

Matsuda, Masatoshi: *See*—
Inooka, Masayoshi; Wakabayashi, Motoyoshi; Matsuda, Masatoshi; Kasuya, Masaaki; Ohguchi, Yoshihoro; Nakamura, Munekazu; and Morimoto, Tatsuo, 4,196,102, Cl. 252-457.000.
Matsumori, Yasuo: *See*—
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Matsumoto, Hiromitsu: *See*—
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Matsumoto, Setsuo, to Singer Company, The. Releasing mechanism for cam followers in a zigzag sewing machine. 4,195,583, Cl. 112-158.00A.
Matsumoto, Yoshihiro: *See*—
Kimata, Kei; Yasuda, Yoshinobu; Kinashi, Ikuo; Matsumoto, Yoshihiro; and Ohshima, Saburo, 4,195,814, Cl. 251-205.000.
Matsushima, Noriaki: *See*—
Funabiki, Kyohei; Matsushima, Noriaki; and Inouye, Naomitsu, 4,196,114, Cl. 260-28.00P.
Matsushita Electric Industrial Co., Ltd.: *See*—
Gamo, Takaharu; Moriwaki, Yoshio; Yamashita, Toshio; and Fukuda, Masataro, 4,195,989, Cl. 75-175.500.
Okamura, Yasushi; and Manabe, Harukazu, 4,195,844, Cl. 274-9.00B.
Matsuura, Tetsuro; Yamamoto, Shinji; Oda, Denichi; and Matsumori, Yasuo, to Ube Industries, Ltd. Fiber-reinforced rubber article and process for producing the same. 4,196,106, Cl. 260-5.000.
Matthews, Robert L. Pulling tool. 4,195,398, Cl. 29-262.000.
Matthey Bishop, Inc.: *See*—
Hunter, James B.; McGuire, George; D'Alessandro, A. F.; and Lawlor, Larry L., 4,196,099, Cl. 252-437.000.
Matushima, Kinji: *See*—
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Maue, Hans-H.: *See*—
Jakob, Gert; and Maue, Hans-H., 4,196,467, Cl. 361-399.000.
May, Walter R.; Zetlmeisl, Michael J.; and Laurence, David F., to Petrolite Corporation. Cold end corrosion rate probe. 4,196,057, Cl. 204-1.00T.
Maytag Company, The: *See*—
Quayle, Lawrence L., 4,195,419, Cl. 34-231.000.
McCabe, Francis J. Self-resetting, cable operated translating drive link. 4,195,384, Cl. 16-48.500.
McCartney, Raymond F.: *See*—
Ives, Kenneth D.; McCartney, Raymond F.; and Shoemaker, Alan K., 4,195,669, Cl. 138-178.000.
McClelland, Ronald O.: *See*—
Becker, Joseph, Jr.; and McClelland, Ronald O., 4,196,054, Cl. 202-227.000.
McClure, Lawrence M., to Koppers Company, Inc. Coke oven machinery spotting system. 4,196,471, Cl. 364-426.000.
McClure, Robert E.: *See*—
Kestigian, Michael; McClure, Robert E.; and Vaher, Eo, 4,195,908, Cl. 350-151.000.
McConnel, Ronald J., to Weyerhaeuser Company. Adjuster for corrugating rolls. 4,196,046, Cl. 162-362.000.
McCullum, R. Gene: *See*—
Best, Walter E.; and McCullum, R. Gene, 4,195,502, Cl. 70-224.000.
McDonie, Arthur F.: *See*—
Engstrom, Ralph W.; and McDonie, Arthur F., 4,196,257, Cl. 428-457.000.
McDonnell, Damien G.: *See*—
Coates, David; Gray, George W.; and McDonnell, Damien G., 4,195,916, Cl. 350-346.000.
McElhannon, Raymond J. Laser guided blind landing system for aircraft. 4,196,346, Cl. 455-611.000.
McEowen, James R.; Smith, Robert M.; and Wang, Tse L., to Bell Telephone Laboratories, Incorporated. Program controlled communication system having individually rearrangeable line selection. 4,196,316, Cl. 179-18.0ES.
McGrath, Patrick J., Jr., to Tektronix, Inc. Shock-absorbing means for mesh-carrying member of a cathode ray tube. 4,196,371, Cl. 313-456.000.
McGuire, George: *See*—
Hunter, James B.; McGuire, George; D'Alessandro, A. F.; and Lawlor, Larry L., 4,196,099, Cl. 252-437.000.
McLaren, John C. Flame retardant plywood panel. 4,196,242, Cl. 428-138.000.
McNeilabs, Inc.: *See*—
Mohrbacher, Richard J.; Ho, Winston; and Tutwiler, Gene, 4,196,300, Cl. 549-90.000.
Mead Corporation, The: *See*—
Sutera, Richard, 4,195,831, Cl. 271-302.0AS.
Mead Johnson & Company: *See*—
Wu, Yao H.; and Lobeck, Walter G., Jr., 4,196,212, Cl. 424-275.000.
Means, Robert W.: *See*—
Whitehouse, Harper J.; Means, Robert W.; Wrench, Edwin H., Jr.; Speiser, Jeffrey M.; and Weber, Allan G., 4,196,448, Cl. 358-135.000.
Medodobiven Kombinat "G. Damyanov": *See*—
Petrov, Dimiter A.; Shentov, Ivan P.; and Genevski, Vladimir V., 4,196,059, Cl. 204-28.000.
Mehta, Harshavardhan C.: *See*—
Fang, Hsai-Yang; and Mehta, Harshavardhan C., 4,196,234, Cl. 427-291.000.
Meissner, David C.: *See*—
Beggs, Donald; and Meissner, David C., 4,195,821, Cl. 266-156.000.
Mele, Joseph E., to Mele Manufacturing Co. Display case for jewels. 4,195,727, Cl. 206-45.000.
Mele Manufacturing Co.: *See*—
Mele, Joseph E., 4,195,727, Cl. 206-45.000.
Melville, James C.; Beatty, Joseph M., II; and Satcher, Joe H., Jr., to Holly Sugar Corporation. Method for reducing color impurities in sugar-containing syrups. 4,196,017, Cl. 127-41.000.
Mencacci, Samuel A., to FMC Corporation. Continuous pressure cooker and cooler with continuous liquid flow. 4,196,225, Cl. 426-523.000.
Merck & Co., Inc.: *See*—
Christensen, Burton G.; and Shih, David H., 4,196,211, Cl. 424-274.000.
Schubert, Paul F., 4,196,285, Cl. 544-20.000.
Woltersdorf, Otto W., Jr.; deSolms, Susan J.; and Cragoe, Edward J., Jr., 4,196,292, Cl. 544-407.000.
Merck Patent Gesellschaft mit beschraenkter Haftung: *See*—
Gante, Joachim; Kurmeier, Hans-Adolf; Orth, Dieter; Schacht, Erich; and Wild, Albrecht, 4,196,215, Cl. 424-308.000.
Seubert, Jurgen; Thomas, Herbert; and Andrews, Peter, 4,196,291, Cl. 544-344.000.
Merten, Helmut L.; and Wilder, Gene R., to Monsanto Company. Making nitrodiarylamines from formyl derivatives of aromatic amines and nitrohaloarenes by admixing with certain aqueous salt solutions. 4,196,146, Cl. 260-576.000.
Merten, Rudolf: *See*—
Zecher, Wilfried; and Merten, Rudolf, 4,196,274, Cl. 528-73.000.
Messer Griesheim GmbH: *See*—
Soecknick, Erhard; and von Hoesslin, Gerhard, 4,195,490, Cl. 62-374.000.
Messerschmitt-Boelkow-Blohm GmbH: *See*—
Busch, Heinz; and Schroder, Peter, 4,195,693, Cl. 169-53.000.
Weiland, Emil, 4,195,967, Cl. 416-134.00A.
Metalimphy: *See*—
Lagarde, Pierre, 4,195,771, Cl. 235-380.000.
Metz, Jean: *See*—
Ulveling, Leon; and Metz, Jean, 4,195,825, Cl. 266-271.000.
Meye, Reinhold W.: *See*—
Finkensiep, Friedhelm; and Meye, Reinhold W., 4,196,163, Cl. 264-148.000.
Meyer, Burton C.: *See*—
Tucker, James E.; and Meyer, Burton C., 4,195,421, Cl. 35-22.00A.
Michel, Edmond, to Solvay & Cie. Process for the production of oriented hollow plastic bodies. 4,196,165, Cl. 264-530.000.
Mickler, Edwin W. Can disintegrating apparatus and method. 4,195,562, Cl. 100-39.000.
Midcon Pipeline Equipment Co.: *See*—
Slavens, Clyde M., 4,195,763, Cl. 228-29.000.
Midrex Corporation: *See*—
Beggs, Donald; and Meissner, David C., 4,195,821, Cl. 266-156.000.
Miettinen, Tapani J.: *See*—
Salokangas, Teuvo T.; Lammi, Unto T.; and Miettinen, Tapani J., 4,196,082, Cl. 210-180.000.
Mihic, Wlajko. Slotting tool with exchangeable cutting insert. 4,195,956, Cl. 407-108.000.
Mikami, Takeshi: *See*—
Adachi, Keiichi; Hirano, Shigeo; Ikeda, Tadashi; and Mikami, Takeshi, 4,195,999, Cl. 430-507.000.
Miller, Armin; and Maginness, Maxwell G., to Datacopy Corporation. Selective copying apparatus. 4,196,450, Cl. 358-256.000.
Miller, Edward B.; and Eichelberger, Charles W., to General Electric Company. Interface driver circuit. 4,196,360, Cl. 307-270.000.
Miller, Harold N.: *See*—
Ryer, Jack; Zielinski, James; Miller, Harold N.; and Brois, Stanley J., 4,195,976, Cl. 44-63.000.
Miller, Robert A.: *See*—
Hornak, Steven S.; Lowdermilk, Robert S.; and Miller, Robert A., 4,196,020, Cl. 134-167.00R.
Miller, Stephen J., to Miller, Virginia. Infant's or child's seat for snowmobiles or the like. 4,195,879, Cl. 297-184.000.
Miller, Virginia: *See*—
Miller, Stephen J., 4,195,879, Cl. 297-184.000.
Mills, Harold R.; and Mills, Robert F. Taping tool. 4,196,028, Cl. 156-71.000.
Mills, Robert F.: *See*—
Mills, Harold R.; and Mills, Robert F., 4,196,028, Cl. 156-71.000.
Milutziki, Udo: *See*—
Gaus, Harry; Milutziki, Udo; and Schotte, Dietwald, 4,195,846, Cl. 274-15.00R.
Minami International Corporation: *See*—
Juba, Hisashi, 4,196,409, Cl. 337-198.000.
Minigrip, Inc.: *See*—
Ausnit, Steven, 4,196,030, Cl. 156-91.000.
Minnesota Mining and Manufacturing Company: *See*—
Abel, Allen J., 4,195,733, Cl. 206-444.000.
Mishin, Petr P.: *See*—
Sladkosheev, Vladimir T.; Shatagin, Oleg A.; Khalemsky, Samuil F.; Sachko, Viktor V.; Abraimov, Boris F.; Manokhin, Anatoly I.; Mishin, Petr P.; Druzhinin, Valery P.; Nechaev, Leonid S.; Kozachenko, Stanislav M.; and Kuchminsky, Jury M., 4,195,685, Cl. 164-420.000.
Mista, Kresimir, to Karl Mayer Textilmaschinenfabrik GmbH. Bobbin slides for respooling machines. 4,195,789, Cl. 242-35.50A.

Mitchem, Jerry W.; Kalen, David D.; and Klahn, Francis C., to Babcock & Wilcox Company, The. Irradiation surveillance specimen assembly. 4,196,047, Cl. 176-15.000.

Mitchem, Jerry W.: *See*—
Kalen, David D.; and Mitchem, Jerry W., 4,195,868, Cl. 292-256.670.

Mitsubishi Denki Kabushiki Kaisha: *See*—
Nakata, Josuke, 4,196,361, Cl. 307-310.000.
Takahashi, Yasuhide, 4,195,528, Cl. 73-579.000.

Mitsubishi Gas Chemical Company, Inc.: *See*—
Taniyama, Susumu; Takanohashi, Hiromitsu; and Inoue, Shoichi, 4,196,014, Cl. 106-287.130.

Mitsui Toatsu Chemicals, Incorporated: *See*—
Yamamoto, Isamu; Noda, Eiichi; and Noguchi, Yoshiaki, 4,196,155, Cl. 260-931.000.

Mitter, Mathias. Stencil printing apparatus. 4,195,567, Cl. 101-115.000.

Miura, Isami: *See*—
Fujimoto, Akihiro; Miura, Isami; and Noguchi, Kazuo, 4,196,076, Cl. 210-21.000.

Miwa, Naotaka: *See*—
Takahashi, Hisao; Nomura, Takeshi; Ohara, Yoshitomo; Nakanishi, Hajime; Miwa, Naotaka; Kawabe, Naoshi; Endo, Tomizo; Hozuma, Hiroshi; and Akimoto, Minoru, 4,196,050, Cl. 196-122.000.

Miyazaki, Tsutomu; Shimizu, Takeshi; and Onoue, Keiji, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Apparatus for forming transfer tail windings on a bobbin in an open-end spinning machine. 4,195,788, Cl. 242-18.0PW.

Mizuno, Hideki: *See*—
Watabe, Isao; and Mizuno, Hideki, 4,196,387, Cl. 324-107.000.

Mohasco Corporation: *See*—
Cycowicz, Izchak; and Caldwell, Robert J., 4,195,878, Cl. 297-83.000.

Mohrbacher, Richard J.; Ho, Winston; and Tutwiler, Gene, to McNeilabs, Inc. α-Alkyl-substituted glycidates and thioglycidates. 4,196,300, Cl. 549-90.000.

Molins Machine Company, Inc.: *See*—
Coburn, Robert E., 4,195,539, Cl. 83-44.000.

Moller, Gunther: *See*—
Vestergaard, Peter; Moller, Gunther; and Madsen, Rud F., 4,196,385, Cl. 324-58.50B.

Molnar, Arpad; Felfoldi, Karoly; Bartok, Mihaly; Karpati, Egon; and Szporny, Laszlo, to Richter Gedeon Vegyeszeti Gyar RT. Pyridylpiperazine derivative with anti-arrythmic effect. 4,196,206, Cl. 424-250.000.

Moloney, John S. Stirling cycle machine. 4,195,482, Cl. 60-517.000.

Monk, Lilly, to Paris Glove of Canada Ltd. Combined mitten and glove. 4,195,405, Cl. 2-158.000.

Monolithic Memories, Inc.: *See*—
Priel, Ury; Gray, Jerry D.; and Frederick, Allen H., 4,196,228, Cl. 427-88.000.

Monosil, Incorporated: *See*—
Santandrea, Joseph F.; and Schell, Daniel, 4,195,838, Cl. 273-88.000.

Monsanto Company: *See*—
Brown, Jasper H.; and Wang, Donald S. T., 4,196,268, Cl. 521-130.000.
Franz, John E.; and Kaufman, Robert J., 4,195,983, Cl. 71-87.000.
Gomez, I. Luis, 4,196,111, Cl. 260-23.00S.
Merten, Helmut L.; and Wilder, Gene R., 4,196,146, Cl. 260-576.000.
Morgan, Albert W.; and Ribaudo, Roland G., 4,196,005, Cl. 106-18.160.

Month, Alfred; and Benner, Timothy E., to RCA Corporation. Pick-up tube having bias lighting and controls therefor. 4,196,372, Cl. 315-10.000.

Montoro Munoz, Francisco: *See*—
Corral Martinez, Cecilio, 4,195,719, Cl. 192-89.00B.

Moodysson, Bengt-Ove M.: *See*—
Bratt, Jan C.; and Moodysson, Bengt-Ove M., 4,195,613, Cl. 123-192.00B.

Mookherjee, Braja D.: *See*—
Trenkle, Robert W.; Mookherjee, Braja D.; Kasper, Robin; Vock, Manfred H.; Vinals, Joaquin; Kiwala, Jacob; and Schmitt, Frederick L., 4,196,306, Cl. 568-824.000.

Moore, Boyd B.; and Kendall, Clarence E., Jr., to Custom Cable Company. Marine umbilical cable. 4,196,307, Cl. 174-47.000.

Moore, James H.: *See*—
Ore, Fernando N.; Ellis, John D.; and Moore, James H., 4,196,172, Cl. 423-167.000.

Moore, L. Frank; and Price, George M., to Frymaster Corporation, The. Solenoid valve with safety control circuit. 4,195,667, Cl. 137-637.100.

Morgan, Albert W.; and Ribaudo, Roland G., to Monsanto Company. Flame resistant phosphate compositions. 4,196,005, Cl. 106-18.160.

Morgan, John H., to GTE Automatic Electric Laboratories, Incorporated. Apparatus for separating snapstrates into individual hybrid substrates. 4,195,758, Cl. 225-98.000.

Mori, Takasuke: *See*—
Narita, Kiichi; Mori, Takasuke; and Ito, Takamichi, 4,195,823, Cl. 266-233.000.

Morici, Frank S.: *See*—
Corrado, Anthony P.; Marchese, Vincent P.; Morici, Frank S.; and Timte, Frank W., 4,195,811, Cl. 251-30.000.

Morimoto, Tatsuo: *See*—
Inooka, Masayoshi; Wakabayashi, Motoyoshi; Matsuda, Masatoshi; Kasuya, Masaaki; Ohguchi, Yoshihoro; Nakamura, Munekazu; and Morimoto, Tatsuo, 4,196,102, Cl. 252-457.000.

Morinaga, Shigeki: *See*—
Takahashi, Tadashi; and Morinaga, Shigeki, 4,195,585, Cl. 112-277.000.

Morinaga, Tsuto: *See*—
Inata, Hiroo; Ogasawara, Makoto; Morinaga, Tsuto; and Norike, Akihiro, 4,196,066, Cl. 204-159.150.

Morita, Keiichi: *See*—
Kuniya, Keiichi; Arakawa, Hideo; Maeda, Kunihiro; and Morita, Keiichi, 4,196,442, Cl. 357-67.000.

Moriwaki, Yoshio: *See*—
Gamo, Takaharu; Moriwaki, Yoshio; Yamashita, Toshio; and Fukuda, Masataro, 4,195,989, Cl. 75-175.500.

Morris, Duane W.: *See*—
Burns, David C.; Shum, Lanson Y.; Reyes, Renato D.; Jacobs, Arthur F.; Morris, Duane W.; and Castner, Raymond P., 4,196,049, Cl. 176-19.00R.

Morris, Earl L.; Hafner, Walter V.; and Sally, Theodore J., to Acorn Engineering Co. Plumbing fixture overflow limiter. 4,195,374, Cl. 4-427.000.

Morrison, Donald R. Screed bar support stake and method. 4,195,809, Cl. 249-205.000.

Morrow, James G., Sr.: *See*—
Beduhn, Daniel E.; and Morrow, James G., Sr., 4,195,740, Cl. 212-66.000.

Morton, Robert S.; and Amrein, James R., to Promotional Marketing Corporation. Multi-product coupon. 4,195,864, Cl. 283-56.000.

Mose, Luciano; Schurig, Helmut; and Strasser, Bernd, to Hooker Chemicals & Plastics Corp. Means for distributing electrolyte into electrolytic cells. 4,196,069, Cl. 204-257.000.

Motoren- und Turbinen-Union Munchen GmbH: *See*—
Kraft, Eckhard; and Lunneman, Volker, 4,195,964, Cl. 415-160.000.

Motorola, Inc.: *See*—
Baghdadi, Aslan; and Gurtler, Richard W., 4,196,041, Cl. 156-620.000.
Deuker, Daniel A.; and Hartwell, Paul A., 4,195,575, Cl. 102-232.000.

Moulton Irrigation Company: *See*—
Scholz, David C., 4,195,781, Cl. 239-177.000.

Moure, Jose. Apparatus for trapping crustaceans. 4,195,436, Cl. 43-100.000.

Mueller, Herbert: *See*—
Huchler, Otto H.; Winderl, Siegfried; Mueller, Herbert; and Hoffmann, Herwig, 4,196,130, Cl. 260-346.110.

Muhr, Dieter; and Cremer, Heinz P., to Keiper Automobiltechnik GmbH & Co. KG. Hinge for a reclinable back of a motor vehicle seat. 4,195,884, Cl. 297-362.000.

Mukaida, Yutaka: *See*—
Enomoto, Satoru; Wada, Hisayuki; Nishita, Sadao; Mukaida, Yutaka; Yanaka, Mikiro; and Takita, Hitoshi, 4,196,135, Cl. 260-429.00R.

Muller, Friedrich A.: *See*—
Korb, Josef; Sprakel, Karl J.; and Muller, Friedrich A., 4,195,450, Cl. 51-319.000.

Muller, George H., to Ford Motor Company. Integral tire inflation valve and tire height sensor. 4,196,414, Cl. 340-58.000.

Muller, Gunter, to ARENCO-BMD Maschinenfabrik GmbH. Method and apparatus for providing air vents or holes in casting moles of molding sand. 4,195,682, Cl. 164-6.000.

Muller, Konrad: *See*—
Muller-Spath, Erich; Muller, Konrad; Kister, Heinz; Schurhoff, Walter; Hillnhutter, Friedrich W.; and Laucht, Walter, 4,196,078, Cl. 210-75.000.
Muller-Spath, Erich; Muller, Konrad; Kister, Heinz; Schurhoff, Walter; Hillnhutter, Friedrich W.; and Laucht, Walter. Process and apparatus for dewatering granulated material, especially granulated blast furnace slag. 4,196,078, Cl. 210-75.000.

Murata Manufacturing Co., Ltd.: *See*—
Kojima, Tatsuo; and Yamauchi, Kiminori, 4,196,324, Cl. 200-11.0DA.
Masaie, Kimio; and Murata, Yoshio, 4,196,407, Cl. 333-191.000.

Murata, Yoshio: *See*—
Masaie, Kimio; and Murata, Yoshio, 4,196,407, Cl. 333-191.000.

Murphy, Clarence R.; Thackaberry, S. Paul; Boehme, Robert E., deceased; and by Boehme, Helen J., legal representative, to Gulf Oil Corporation. Process for removal of phenols from dilute aqueous solutions thereof. 4,196,305, Cl. 568-758.000.

Murso, Bernhard: *See*—
Spieth, Ernst K.; Murso, Bernhard; and Riedmuller, Eberhard, 4,195,840, Cl. 273-406.000.

Mussoni, Frank L.; and Withrow, Gary A., to Dennison Manufacturing Company. Product and process for making a creped and calendered cellulosic electrical paper. 4,196,044, Cl. 162-112.000.

Myers, Thomas E.: *See*—
Myers, Wallace C., Sr.; Myers, Wallace C., Jr.; Pollet, James A.; and Myers, Thomas E., 4,195,483, Cl. 60-530.000.

Myers, Wallace C., Jr.: *See*—
Myers, Wallace C., Sr.; Myers, Wallace C., Jr.; Pollet, James A.; and Myers, Thomas E., 4,195,483, Cl. 60-530.000.
Myers, Wallace C., Sr.; Myers, Wallace C., Jr.; Pollet, James A.; and Myers, Thomas E. Engine apparatus. 4,195,483, Cl. 60-530.000.

Nachbur, Hermann, to Ciba-Geigy Corporation. Process for flameproofing cellulosic fibrous material. 4,196,260, Cl. 428-526.000.

Nadherny, Rudolph E., to Illinois Railway Equipment Company. Adjustable support for bottom brake connecting rods for railway cars. 4,195,715, Cl. 188-210.000.

Nagasaka, Yasumasa; Furukawa, Haruki; Maeda, Takao; and Tsukatani, Masatsugu, to Toyota Jidosha Kogyo Kabushiki Kaisha. Blow-by gas recirculating device. 4,195,607, Cl. 123-119.00B.

Nagy, Rebecca J., heir: *See*—
Kellogg, John E., deceased; and Nagy, Rebecca J., heir, 4,195,618, Cl. 126-120.000.

Naka, Akihiro: *See*—
Hamuro, Yasumasa; Naka, Akihiro; and Honjo, Shuichi, 4,195,975, Cl. 44-51.000.

Nakada, Masahiko: *See*—
Sanada, Masakatsu; Ito, Toshimitsu; and Nakada, Masahiko, 4,195,608, Cl. 123-136.000.

Nakagawasai, Tadashi. Machine for driving vertical members. 4,195,698, Cl. 173-44.000.

Nakajima, Masahiro: *See*—
Watanabe, Masayuki; Komeya, Katsutoshi; and Nakajima, Masahiro, 4,196,171, Cl. 422-246.000.

Nakajima, Yosuke; Hoshi, Yoshiyuki; and Fukuoka, Takayoshi, to Fuji Photo Film Co., Ltd. Method of recording radiation image. 4,195,996, Cl. 430-380.000.

Nakamura, Munekazu: *See*—
Inooka, Masayoshi; Wakabayashi, Motoyoshi; Matsuda, Masatoshi; Kasuya, Masaaki; Ohguchi, Yoshihoro; Nakamura, Munekazu; and Morimoto, Tatsuo, 4,196,102, Cl. 252-457.000.

Nakanishi, Hajime: *See*—
Takahashi, Hisao; Nomura, Takeshi; Ohara, Yoshitomo; Nakanishi, Hajime; Miwa, Naotaka; Kawabe, Naoshi; Endo, Tomizo; Hozuma, Hiroshi; and Akimoto, Minoru, 4,196,050, Cl. 196-122.000.

Nakanishi, Mutsuo: *See*—
Ikeda, Masahiko; Nakanishi, Mutsuo; and Katsumoto, Norio, 4,196,335, Cl. 219-73.000.

Nakata, Josuke, to Mitsubishi Denki Kabushiki Kaisha. Temperature change detector. 4,196,361, Cl. 307-310.000.

Nakayama, Wataru: *See*—
Fujie, Kunio; Nakayama, Wataru; Kuwahara, Heikichi; Daikoku, Takahiro; and Kakizaki, Kimio, 4,195,688, Cl. 165-133.000.

Nalco Chemical Company: *See*—
Goretta, Louis A.; and Otremba, Robert R., 4,196,272, Cl. 526-64.000.

Napoli, Joseph D., to American Optical Corporation. Combined input connector and lead selection switch for electrical signal processing apparatus. 4,196,323, Cl. 200-51.040.

Narita, Kiichi; Mori, Takasuke; and Ito, Takamichi, to Kobe Steel, Ltd. Method of and an apparatus for agitating a bath of melted metal for treating the same. 4,195,823, Cl. 266-233.000.

Naslund, Gustav, to Korstrask Mekaniska, G. Naslund. Apparatus for bending section-sheet, plate strip and the like. 4,195,511, Cl. 72-384.000.

National Semiconductor Corporation: *See*—
Culmer, Daniel D.; and Russell, Ronald W., 4,196,420, Cl. 340-347.0AD.

Naumann, Klaus, to Bayer Aktiengesellschaft. Separation of stereoisomeric cyclic carboxylic acids. 4,196,304, Cl. 562-401.000.

NCR Corporation: *See*—
Phelps, Donald E., 4,196,386, Cl. 324-73.0PC.

Nechaev, Leonid S.: *See*—
Sladkoshteev, Vladimir T.; Shatagin, Oleg A.; Khalemsky, Samuil F.; Sachko, Viktor V.; Abraimov, Boris F.; Manokhin, Anatoly I.; Mishin, Petr P.; Druzhinin, Valery P.; Nechaev, Leonid S.; Kozachenko, Stanislav M.; and Kuchminsky, Jury M., 4,195,685, Cl. 164-420.000.

Nedelec, Lucien: *See*—
Dumont, Claude; Guillaume, Jacques; and Nedelec, Lucien, 4,196,209, Cl. 424-267.000.

Neff, James A., to Mac Valves, Inc. Pressure reducer and flow control valve. 4,195,552, Cl. 91-443.000.

Nehring, John R.; and King, George E., to International Paper Company. Chest drainage system with visual float means. 4,195,633, Cl. 128-276.000.

Neitzke, Harold H. Fishing line reel. 4,195,434, Cl. 43-20.000.

Nelson, Dale H., to Bell Telephone Laboratories, Incorporated. Electronically-switched multifrequency generator for providing tone signaling. 4,196,318, Cl. 179-84.0VF.

Networks Electronic Corp.: *See*—
Patrichi, Mihai D., 4,195,368, Cl. 3-1.910.
Patrichi, Mihai D., 4,196,249, Cl. 428-242.000.

Neufeld, Eugene S. Graphic displays employing electroluminescent panels. 4,195,431, Cl. 40-544.000.

Neuman, John G.: *See*—
Johnston, Richard W.; Neuman, John G.; Schroeder, Thaddeus; and Traub, Norman L., 4,195,673, Cl. 141-349.000.

Newling, Robert P., to Joslyn Mfg. and Supply Co. Composite sucker rod string and method of use thereof. 4,195,691, Cl. 166-315.000.

Newman, Thomas C., to Akzona Incorporated. Ether diamine salts of N-acylsarcosines and their use as corrosion inhibitors. 4,195,977, Cl. 44-71.000.

Newman, Timothy L. Truck mounted railroad crane hydraulic swivel means. 4,195,741, Cl. 212-66.000.

NGK Spark Plug Co., Ltd.: *See*—
Ito, Tsuneo, 4,195,988, Cl. 75-165.000.

Nichols, Philip T.: *See*—
Watts, Paul J.; Crawford, Lynn D.; and Nichols, Philip T., 4,195,651, Cl. 135-2.000.

Nickerson, William A.: *See*—
Keller, James R.; and Nickerson, William A., 4,195,462, Cl. 52-690.000.

Niehaus, William C.; and Wemple, Stuart H., to Bell Telephone Laboratories, Incorporated. Semiconductor device drain contact configuration. 4,196,439, Cl. 357-22.000.

Nielsen, Kaj: *See*—
Harvest, Nils-Ole; Hasberg, Niels; and Nielsen, Kaj, 4,196,376, Cl. 318-78.000.

Niijima, Kenji: *See*—
Noguchi, Katsuichi; Maeda, Kazuo; Anzai, Yuriko; Hirai, Minoru; Izumi, Kazuo; and Niijima, Kenji, 4,195,649, Cl. 131-261.00R.

Niles Parts Co., Ltd.: *See*—
Hattori, Yoshio, 4,196,322, Cl. 200-5.00R.

Nill, Kenneth W.: *See*—
Butler, Jack F.; and Nill, Kenneth W., 4,196,402, Cl. 331-94.50C.

Nippon Concrete Industries Co., Ltd.: *See*—
Fukushima, Yoshikiyo, 4,195,487, Cl. 405-257.000.

Nippon Electric Co., Ltd.: *See*—
Maehashi, Yukio, 4,196,362, Cl. 307-350.000.
Tama, Tomoo; Inaba, Masao; and Kashigi, Kazuo, 4,196,449, Cl. 358-183.000.

Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Iyeta, Motoi; and Baba, Mitsuru, 4,196,379, Cl. 318-601.000.
Koike, Masahiko, 4,195,544, Cl. 84-1.190.
Nishimoto, Tetsuo, 4,195,545, Cl. 84-1.260.

Nippon Kasei Chemical Co., Ltd.: *See*—
Saito, Hiroyasu; and Sekiguchi, Akio, 4,196,289, Cl. 544-221.000.

Nippon Kogaku K.K.: *See*—
Katayama, Akira, 4,195,926, Cl. 354-273.000.
Takayama, Hidetaka; and Ikeda, Hideo, 4,196,246, Cl. 428-213.000.

Nippon Oil Co., Ltd.: *See*—
Kaiya, Atsushi; Otsuki, Yutaka; and Horii, Hideo, 4,196,112, Cl. 260-23.70M.
Kaiya, Atsushi; Otsuki, Yutaka; and Horii, Hideo, 4,196,113, Cl. 260-23.70M.

Nippon Oil and Fats Co., Ltd.: *See*—
Suyama, Shuji; and Shimizu, Mamoru, 4,196,151, Cl. 260-601.00R.

Nippon Oil Seal Industry Co., Ltd.: *See*—
Otsuka, Junji, 4,195,853, Cl. 277-92.000.

Nippon Soken, Inc.: *See*—
Sowa, Kunihiro, 4,196,413, Cl. 340-52.00F.

Nippondenso Co., Ltd.: *See*—
Ikebukuro, Munemitsu; and Yamaguchi, Masao, 4,195,777, Cl. 237-12.30B.

Nis, John R.: *See*—
Coucoulas, Alexander; and Nis, John R., 4,195,982, Cl. 65-134.000.

Nishida, Minoru: *See*—
Imanaka, Hiroshi; and Nishida, Minoru, 4,196,193, Cl. 424-114.000.

Nishimoto, Tetsuo, to Nippon Gakki Seizo Kabushiki Kaisha. Digital touch response circuit of electronic musical instrument. 4,195,545, Cl. 84-1.260.

Nishimura, Shinichi: *See*—
Kawase, Suminosuke; Uchiumi, Yoshihisa; and Nishimura, Shinichi, 4,195,903, Cl. 350-36.000.

Nishimura, Yasuhiko, to Ricoh Denshi Kogyo Kabushiki Kaisha. Mark sensing apparatus. 4,195,772, Cl. 235-441.000.

Nishita, Sadao: *See*—
Enomoto, Satoru; Wada, Hisayuki; Nishita, Sadao; Mukaida, Yutaka; Yanaka, Mikiro; and Takita, Hitoshi, 4,196,135, Cl. 260-429.00R.

Nissan Motor Company, Limited: *See*—
Okamura, Kenji, 4,195,531, Cl. 73-723.000.
Usui, Keizaburo; and Hayama, Isao, 4,195,720, Cl. 192-0.092.

Nissin Kogyo Kabushikia Kaisha: *See*—
Takeuchi, Hiroo, 4,195,661, Cl. 137-515.500.

No, Shinichiro: *See*—
Ozawa, Kazumi; and No, Shinichiro, 4,195,566, Cl. 101-38.00R.

Noda, Eiichi: *See*—
Yamamoto, Isamu; Noda, Eiichi; and Noguchi, Yoshiaki, 4,196,155, Cl. 260-931.000.

Noddings, John; and Borton, Roland K., to Associated Engineering Limited. Speed responsive systems. 4,196,466, Cl. 361-239.000.

Noguchi, Katsuichi; Maeda, Kazuo; Anzai, Yuriko; Hirai, Minoru; Izumi, Kazuo; and Niijima, Kenji, to Toho Beslon Co., Ltd.; and Japan Tobacco and Salt Public Corp., The. Tobacco smoke filter. 4,195,649, Cl. 131-261.00R.

Noguchi, Kazuo: *See*—
Fujimoto, Akihiro; Miura, Isami; and Noguchi, Kazuo, 4,196,076, Cl. 210-21.000.

Noguchi, Yoshiaki: *See*—
Yamamoto, Isamu; Noda, Eiichi; and Noguchi, Yoshiaki, 4,196,155, Cl. 260-931.000.

Nolan, Gaillard R.; and Flynn, William E., to Instrumentation Laboratory, Inc. Fluid valve. 4,195,665, Cl. 137-624.180.

Nolan, John H.: *See*—
Klahn, Francis C.; Nolan, John H.; and Wills, Christopher, 4,195,869, Cl. 292-256.670.

Nomura, Takeshi: *See*—
Takahashi, Hisao; Nomura, Takeshi; Ohara, Yoshitomo; Nakanishi, Hajime; Miwa, Naotaka; Kawabe, Naoshi; Endo, Tomizo; Hozuma, Hiroshi; and Akimoto, Minoru, 4,196,050, Cl. 196-122.000.

Norcross, Paul, to Thexton Manufacturing Company. Coupler for grease guns. 4,195,812, Cl. 251-148.000.
Norike, Akihiro: *See—*
Inata, Hiroo; Ogasawara, Makoto; Morinaga, Tsuto; and Norike, Akihiro, 4,196,066, Cl. 204-159.150.
North, George G.; and Vogilin, George E., to United States of America, Energy. Differentially-charged and sequentially-switched square-wave pulse forming network. 4,196,359, Cl. 307-268.000.
Northern Telecom Limited: *See—*
King, Frederick D.; and Swiecicki, Tomasz S., 4,195,468, Cl. 57-9.000.
Novichkov, Vladimir E.: *See—*
Shapiro, Semen V.; Gutin, Leonid I.; Kiyamov, Rinat N.; Okhotnikov, Viktor A.; Roginskaya, Ljubov E.; Kazantsev, Vladimir G.; and Novichkov, Vladimir E., 4,196,468, Cl. 363-75.000.
Novick, Sheldon; and Wenrich, Carl M., to Teledyne Mid-America Corporation. Sewing machine stitching control system. 4,195,582, Cl. 112-121.110.
Nozaki, Koichi: *See—*
Tobita, Hideyuki; and Nozaki, Koichi, 4,195,500, Cl. 68-12.00R.
NSK-Warner K.K.: *See—*
Ueda, Takeo; Fujita, Shinichi; Tachiki, Hideo; and Asano, Shuichi, 4,19°,392, Cl. 24-230.00A.
NTN Toyo Bearing Company, Limited: *See—*
Kimata, Kei; Yasuda, Yoshinobu; Kinashi, Ikuo; Matsumoto, Yoshihiro; and Ohshima, Saburo, 4,195,814, Cl. 251-205.000.
Nuclear Engineering Company, Inc.: *See—*
Gablin, Kenneth A.; and Hansen, Larry J., 4,196,169, Cl. 422-159.000.
Nuclepore Corporation: *See—*
Chao, Kwang C.; and Porter, Mark C., 4,196,070, Cl. 204-266.000.
Nunn, Bernard J. Cleaning device for phonograph records. 4,195,847, Cl. 274-47.000.
N.V. Nederlandsche Apparatenfabriek NEDAP. *See—*
Kip, Harm J.; and Fockens, Tallienco W. H., 4,196,418, Cl. 340-152.00T.
Occidental Industries, Ltd.: *See—*
Hawkins, Gerald P., 4,195,749, Cl. 220-268.000.
Occidental Petroleum Corporation: *See—*
Ore, Fernando N.; Ellis, John D.; and Moore, James H., 4,196,172, Cl. 423-167.000.
Oda, Denichi: *See—*
Matsuura, Tetsuro; Yamamoto, Shinji; Oda, Denichi; and Matsumori, Yasuo, 4,196,106, Cl. 260-5.000.
Oesterlin, Rudolf: *See—*
Bell, Malcolm R.; and Oesterlin, Rudolf, 4,196,296, Cl. 546-272.000.
Ogasawara, Makoto: *See—*
Inata, Hiroo; Ogasawara, Makoto; Morinaga, Tsuto; and Norike, Akihiro, 4,196,066, Cl. 204-159.150.
Ogawa, Francis T., to Emerson Electric Company. Combustion products detection apparatus. 4,196,426, Cl. 340-629.000.
Ogawa, Tadashi: *See—*
Okatani, Masanao; Onishi, Hiroshi; Ishibashi, Yoshiaki; Sato, Reisuke; Suganuma, Hisashi; Yokogawa, Tomohisa; Ueki, Yoshiharu; Kama, Haruo; Kosuga, Tadashi; and Ogawa, Tadashi, 4,196,395, Cl. 455-154.000.
Ogden, Ralph. Programmable controller system for industrial process apparatus. 4,195,773, Cl. 235-495.000.
Ogden, William L., to Beloit Corporation. Method and apparatus for texturizing and softening non-woven webs. 4,196,045, Cl. 162-117.000.
Ogren, Dennis F.: *See—*
Simone, Andre A.; Ogren, Dennis F.; Adams, William R.; and Kohn, Harold B., 4,196,080, Cl. 210-83.000.
Oguagha, Patrick C., to Procter & Gamble Company, The. Process for producing antistatic, fabric-softening detergent composition. 4,196,104, Cl. 252-542.000.
Ohara, Naoki, to Aisin Seiki Kabushiki Kaisha. Mechanism for moving work fabric for embroidering by a sewing machine. 4,195,581, Cl. 112-103.000.
Ohara, Yoshitomo: *See—*
Takahashi, Hisao; Nomura, Takeshi; Ohara, Yoshitomo; Nakanishi, Hajime; Miwa, Naotaka; Kawabe, Naoshi; Endo, Tomizo; Hozuma, Hiroshi; and Akimoto, Minoru, 4,196,050, Cl. 196-122.000.
Ohguchi, Yoshihoro: *See—*
Inooka, Masayoshi; Wakabayashi, Motoyoshi; Matsuda, Masatoshi; Kasuya, Masaaki; Ohguchi, Yoshihoro; Nakamura, Munekazu; and Morimoto, Tatsuo, 4,196,102, Cl. 252-457.000.
Ohio State University, The: *See—*
Gilson, Richard D.; and Ventola, Ronald W., 4,195,802, Cl. 244-17.130.
Ohono, Kazunori: *See—*
Doi, Yoshikazu; Sakai, Yutaka; and Ohono, Kazunori, 4,195,912, Cl. 350-184.000.
Ohshima, Saburo: *See—*
Kimata, Kei; Yasuda, Yoshinobu; Kinashi, Ikuo; Matsumoto, Yoshihiro; and Ohshima, Saburo, 4,195,814, Cl. 251-205.000.
Okada, Taiji. Carcinostatic composition containing 3-N-o-toluyl-5-fluorouracil producing the same. 4,196,202, Cl. 424-199.000.
Okada, Takashi; Kuniyoshi, Yasunobu; and Tominaga, Kiyonori, to Sony Corporation. Time-base error correction. 4,196,445, Cl. 358-8.000.
Okamura, Kenji, to Nissan Motor Company, Limited. Pressure detector using an averaging circuit. 4,195,531, Cl. 73-723.000.
Okamura, Masatoshi; and Shiba, Haruo, to TDK Electronics Company, Limited. Tape cassette. 4,195,797, Cl. 242-199.000.
Okamura, Yasushi; and Manabe, Harukazu, to Matsushita Electric Industrial Co., Ltd. Audiovisual card reproducing device. 4,195,844, Cl. 274-9.00B.
Okatani, Masanao; Onishi, Hiroshi; Ishibashi, Yoshiaki; Sato, Reisuke; Suganuma, Hisashi; Yokogawa, Tomohisa; Ueki, Yoshiharu; Kama, Haruo; Kosuga, Tadashi; and Ogawa, Tadashi, to Pioneer Electronic Corporation. Preset state indicating unit in an electronic tuning type receiver. 4,196,395, Cl. 455-154.000.
Okhotnikov, Viktor A.: *See—*
Shapiro, Semen V.; Gutin, Leonid I.; Kiyamov, Rinat N.; Okhotnikov, Viktor A.; Roginskaya, Ljubov E.; Kazantsev, Vladimir G.; and Novichkov, Vladimir E., 4,196,468, Cl. 363-75.000.
Okuda, Masao: *See—*
Watanabe, Seizaburo; Seo, Yuji; Hattori, Eiji; Okuda, Masao; and Watanabe, Hiroshi, 4,196,267, Cl. 521-93.000.
Olen, Arthur M.: *See—*
Elias, Jack; and Olen, Arthur M., 4,195,769, Cl. 371-20.000.
Olin Corporation: *See—*
Lynch, Richard W., 4,196,140, Cl. 260-453.00R.
Sakowski, Walter J., 4,196,184, Cl. 423-639.000.
Wood, Judson A.; and Specht, Steven J., 4,196,071, Cl. 204-266.000.
Olsen, C. Eric, to California Medical Developments, Inc. Drug detection device. 4,196,167, Cl. 422-61.000.
Olympus Optical Co., Ltd.: *See—*
Kondo, Isao, 4,196,458, Cl. 362-10.000.
Osanai, Akira, 4,195,796, Cl. 242-199.000.
Yamashita, Nobuo, 4,195,904, Cl. 350-68.000.
Omron Tateisi Electronics, Co.: *See—*
Iwakiri, Norio; and Kiyono, Yasuhiro, 4,196,348, Cl. 250-229.000.
Omura, Satoshi; Tanaka, Haruo; Awaya, Juichi; and Hata, Toju, to Kitasato Institute (Kitasato Kenkyuosho), The. Production of nanaomycin A and derivatives thereof. 4,196,266, Cl. 435-125.000.
O'Neal, John. Apparatus for transporting glass sheets and the like. 4,195,738, Cl. 211-41.000.
Onishi, Hiroshi: *See—*
Okatani, Masanao; Onishi, Hiroshi; Ishibashi, Yoshiaki; Sato, Reisuke; Suganuma, Hisashi; Yokogawa, Tomohisa; Ueki, Yoshiharu; Kama, Haruo; Kosuga, Tadashi; and Ogawa, Tadashi, 4,196,395, Cl. 455-154.000.
Onoue, Keiji: *See—*
Miyazaki, Tsutomu; Shimizu, Takeshi; and Onoue, Keiji, 4,195,788, Cl. 242-18.0PW.
Oprach, Klaus: *See—*
Ullmann, Roland; Schweingruber, Otto; and Oprach, Klaus, 4,195,650, Cl. 132-83.00R.
Ore, Fernando N.; Ellis, John D.; and Moore, James H., to Occidental Petroleum Corporation. Hemihydrate type phosphoric acid process. 4,196,172, Cl. 423-167.000.
O'Rell, Michael K.: *See—*
Jones, Robert J.; and O'Rell, Michael K., 4,196,277, Cl. 528-208.000.
Orr, Joan B.: *See—*
Orr, Robert P.; Orr, Joan B.; and Orr, Thomas P., 4,195,670, Cl. 139-192.000.
Orr, Robert P.; Orr, Joan B.; and Orr, Thomas P. Reversible beater reed for a weaving loom. 4,195,670, Cl. 139-192.000.
Orr, Thomas P.: *See—*
Orr, Robert P.; Orr, Joan B.; and Orr, Thomas P., 4,195,670, Cl. 139-192.000.
Orth, Dieter: *See—*
Gante, Joachim; Kurmeier, Hans-Adolf; Orth, Dieter; Schacht, Erich; and Wild, Albrecht, 4,196,215, Cl. 424-308.000.
Osanai, Akira, to Olympus Optical Co., Ltd. Tape cassette. 4,195,796, Cl. 242-199.000.
Oshkosh Truck Corporation: *See—*
Larson, Thomas A.; Verhoff, Donald H.; and Blank, Wallace J., 4,195,856, Cl. 280-81.00R.
Otremba, Robert R.: *See—*
Goretta, Louis A.; and Otremba, Robert R., 4,196,272, Cl. 526-64.000.
Otsuka, Junji, to Nippon Oil Seal Industry Co., Ltd. Mechanical shaft seal. 4,195,853, Cl. 277-92.000.
Otsuki, Yutaka: *See—*
Kaiya, Atsushi; Otsuki, Yutaka; and Horii, Hideo, 4,196,112, Cl. 260-23.70M.
Kaiya, Atsushi; Otsuki, Yutaka; and Horii, Hideo, 4,196,113, Cl. 260-23.70M.
Otto, Eberhard: *See—*
Wirth, Hermann O.; Wehner, Hermann W.; and Otto, Eberhard, 4,196,137, Cl. 260-429.700.
Outboard Marine Corporation: *See—*
Anderson, Larry L.; Shumaker, Lawrence W.; and Van Rens, Russell J., 4,195,722, Cl. 192-131.00R.
Heismann, Richard A., 4,195,466, Cl. 56-10.500.
Prince, Anthony P., 4,195,534, Cl. 74-491.000.
Taipale, Dale L.; and Wlezien, Richard A., 4,195,660, Cl. 137-512.100.
Owens-Illinois, Inc.: *See—*
Go, Santos W., 4,196,275, Cl. 528-173.000.
Oxford Hill, Ltd.: *See—*
Thiele, Geraldine H., 4,196,218, Cl. 424-318.000.
Ozawa, Kazumi; and No, Shinichiro, to Kabushiki Kaisha Yakult Honsha. Multicolor rotary press for bottles. 4,195,566, Cl. 101-38.00R.

Ozen Co., Ltd.: *See*—
Watanabe, Katsumi; Shiseki, Yutaka; and Koike, Eishi, 4,195,843, Cl. 274-1.00A.
Pacific Oil Marketing Equipment Company: *See*—
Madden, Michael J., 4,195,674, Cl. 141-392.000.
Paget, Charles J.; and Wikel, James H., to Eli Lilly and Company. Substituted 1-sulfonylbenzimidazoles. 4,196,125, Cl. 548-141.000.
Palmieri, John P.: *See*—
Palmieri, Vincent; and Palmieri, John P., 4,195,408, Cl. 30-276.000.
Palmieri, Vincent; and Palmieri, John P. Convertible, automatic to manual, nylon line vegetation cutter. 4,195,408, Cl. 30-276.000.
Panduit Corp.: *See*—
Caveney, Jack E.; Brauer, Dale P.; Cesaro, William G.; and Bulanda, John J., 4,195,902, Cl. 339-258.00S.
Panoduz Anstalt: *See*—
Privas, Yves E., 4,196,029, Cl. 156-89.000.
Pargeter, John K.; and Ahmad, Umar M. U., to International Nickel Co., Inc., The. Catalyst useful for methanation and preparation thereof. 4,196,100, Cl. 252-439.000.
Paris Glove of Canada Ltd.: *See*—
Monk, Lilly, 4,195,405, Cl. 2-158.000.
Parker, Donald L.: *See*—
Mathues, Thomas P.; and Parker, Donald L., 4,195,484, Cl. 60-547.00R.
Parker, James J. Multipurpose beach equipment. 4,195,378, Cl. 5-419.000.
Parker, Wendell R.; Silverman, Mark H.; and Warner, Willis L., to Cutter Laboratories, Inc. Fluid flow valve. 4,195,632, Cl. 128-272.000.
Parks, Harold G., to General Electric Company. Electron optics apparatus. 4,196,373, Cl. 315-14.000.
Parmentier, Alain R. A.: *See*—
Bougon, Pierre P. A.; Parmentier, Alain R. A.; and Weiss, Pierre M., 4,195,911, Cl. 350-171.000.
Pasint, Joseph J.: *See*—
Dierksmeier, Jorge; and Pasint, Joseph J., 4,195,658, Cl. 137-462.000.
Patel, Mahesh S.; and Quaas, Joseph F., to Eutectic Corporation. High hardness copper-aluminum alloy flame spray powder. 4,196,237, Cl. 427-419.100.
Patelli, Bianca: *See*—
Beacco, Enzo; Bernardi, Luigi; Di Salle, Enrico; Falconi, Giovanni; and Patelli, Bianca, 4,196,288, Cl. 544-125.000.
Patrichi, Mihai D., to Networks Electronic Corp. Surgical repair pad for disease-damaged joints and method of implanting the same. 4,195,368, Cl. 3-1.910.
Patrichi, Mihai D., to Networks Electronic Corp. Self lubricating ball joint liner characterized by a surface comprising hard metal particles. 4,196,249, Cl. 428-242.000.
Patrie, Jos; Lefebvre, Jacques; and Boddele, Dominique, to Societe de Vente de l'Aluminium Pechiney. Method of surface treating an aluminum wire for electrical use. 4,196,060, Cl. 204-28.000.
Patzold, Ernst E. S.: *See*—
Tasman, Herman A.; and Patzold, Ernst E. S., 4,195,523, Cl. 73-339.00A.
Paul, Korchinski N. Patient lifting device. 4,195,375, Cl. 5-81.00R.
Paul Wurth S.A.: *See*—
Ulveling, Leon; and Metz, Jean, 4,195,825, Cl. 266-271.000.
Pauls, Edward A. Ski stiffness and camber indicator. 4,195,532, Cl. 73-849.000.
Pavia, Edgar H. Apparatus for emergency water purification. 4,196,081, Cl. 210-94.000.
Pawloski, Chester E., to Dow Chemical Company, The. O,O-bis(substituted pyridinyl)phosphonates and phosphonothioates. 4,196,293, Cl. 546-25.000.
Payne, Thomas R., to General Electric Company. Combination oven fully utilizing the current-supplying capability of a power source. 4,196,330, Cl. 219-10.55B.
Peabody Coal Company: *See*—
Haley, Jack R.; Smith, Jimmy B.; and Mansfield, H. Vaughn, 4,196,051, Cl. 201-24.000.
Peake, Clinton J.; Harnish, Wayne N.; and Davidson, Bruce L., to FMC Corporation. 5-Substituted-thio-3-chloro-4H-1,2,6-thiadiazin-4-ones. 4,196,284, Cl. 544-8.000.
Pearson, Asa M.: *See*—
Wallis, Thomas F., Jr.; Pearson, Asa M.; and Wallis, Robert C., 4,195,606, Cl. 123-119.00E.
Pellar, Ronald J., to Xerox Corporation. Electronic halftone generator. 4,196,451, Cl. 358-283.000.
Pellerin Milnor Corporation (Entire): *See*—
Pellerin, Norvin L., 4,195,498, Cl. 68-3.00R.
Pellerin, Norvin L., to Pellerin Milnor Corporation (Entire). Automatic laundry system. 4,195,498, Cl. 68-3.00R.
Penberthy, H. Larry. Molten glass homogenizer and method of homogenizing glass. 4,195,981, Cl. 65-134.000.
Pennwalt Corporation: *See*—
Smoller, Stanley B.; and Frock, Gerald I., 4,196,336, Cl. 219-76.150.
Percoco, Jane, to Percoco, Jane. Security striker plate. 4,195,870, Cl. 292-340.000.
Perlman, David J.: *See*—
Kelly, Helen J.; Perlman, David J.; and Satya, Akella V. S., 4,196,389, Cl. 324-158.00R.
Petersen, Bjarne L.: *See*—
Ronnhult, John F.; Petersen, Bjarne L.; and Sjostrom, Staffan S., 4,195,883, Cl. 297-302.000.
Peterson, Donald M. Boiler tube welding clamp. 4,195,828, Cl. 269-43.000.
Petrolite Corporation: *See*—
May, Walter R.; Zetlmeisl, Michael J.; and Laurence, David F., 4,196,057, Cl. 204-1.00T.
Petrov, Dimiter A.; Shentov, Ivan P.; and Genevski, Vladimir V., to Medodobiven Kombinat "G. Damyanov". Method for electrolysis of non-ferrous metal. 4,196,059, Cl. 204-28.000.
Pett, Robert A.: *See*—
Willermet, Pierre A.; and Pett, Robert A., 4,196,182, Cl. 423-449.000.
Petzoldt, Karl; Steinbeck, Hermann; and Elger, Walter, to Schering Aktiengesellschaft. Hydroxylated 1 alpha, 2 alpha-methylene steroids. 4,196,204, Cl. 424-243.000.
Petzoldt, Karl: *See*—
Kapp, Joachim-Friedrich; Kieslich, Kalus; Laurent, Henry; and Petzoldt, Karl, 4,196,203, Cl. 424-242.000.
Pfaff Industriemaschinen GmbH: *See*—
Lux, Hans W.; and Willenbacher, Erich, 4,195,830, Cl. 271-8.00R.
Pfeil, Erhard: *See*—
Jansa, Wolfgang; Pfeil, Erhard; and Waldhorst, Paul, 4,195,824, Cl. 266-246.000.
Phelps, Donald E., to NCR Corporation. Method and portable apparatus for testing digital printed circuit boards. 4,196,386, Cl. 324-73.0PC.
Philip Morris Incorporated: *See*—
Kite, George F., 4,195,646, Cl. 131-140.00R.
Philipponi, Walter F. Trailer with towbar. 4,195,861, Cl. 280-489.000.
Phillips, Calvert F., Jr., to United States of America, Air Force. Radar pulse phase code system. 4,196,435, Cl. 343-17.2PC.
Phillips, Darwin E.: *See*—
Gard, Leslie H.; and Phillips, Darwin E., 4,195,936, Cl. 400-124.000.
Phillips Petroleum Company: *See*—
Bresson, Clarence R., 4,196,115, Cl. 260-28.50B.
Martin, Michael D., 4,195,979, Cl. 62-26.000.
Phillips, Steven J.: *See*—
Zeff, Robert H.; and Phillips, Steven J., 4,195,623, Cl. 128-1.00D.
Pierce, Linden W. Heat exchanger air deflectors. 4,195,686, Cl. 165-1.000.
Pierce, Richard L.: *See*—
Dourte, Dixon D.; Pierce, Richard L.; and Spawr, Walter J., 4,195,913, Cl. 350-292.000.
Pinchback, Tyrus R., to Wilson-Garner Company. Nut. 4,195,678, Cl. 151-34.000.
Pioneer Electronic Corporation: *See*—
Inaba, Shizuo, 4,195,845, Cl. 274-9.00R.
Okatani, Masanao; Onishi, Hiroshi; Ishibashi, Yoshiaki; Sato, Reisuke; Suganuma, Hisashi; Yokogawa, Tomohisa; Ueki, Yoshiharu; Kama, Haruo; Kosuga, Tadashi; and Ogawa, Tadashi, 4,196,395, Cl. 455-154.000.
Tohma, Teruo; Yoshino, Toshikazu; and Tsukagoshi, Tsunehiro, 4,196,022, Cl. 148-6.000.
Pitkin, John E., to Smiths Industries Limited. Probe assembly with resiliently mounted sensor head. 4,196,390, Cl. 324-262.000.
Pitts, Edward T. Solar energy system. 4,195,775, Cl. 126-425.000.
Pitzer, Charles L.; and Jacobson, Norman, to Witco Chemical Corporation. Preparation of overbased magnesium sulfurized phenates. 4,196,089, Cl. 252-42.700.
Plastona (John Waddington) Ltd.: *See*—
Ward, Peter, 4,196,164, Cl. 264-322.000.
Plevak, Lubomir: *See*—
Becker, Kunibert; Heyer, Willy; Plevak, Lubomir; and Dodt, Jurgen, 4,195,953, Cl. 405-300.000.
Plevjak, John G. Collision activated, automatic electricity disconnector for vehicles. 4,195,897, Cl. 339-45.00R.
Plumadore, John D.: *See*—
Brown, Lee R.; Jose, L. Herrera; and Plumadore, John D., 4,195,991, Cl. 430-55.000.
Pogge, Hans B.: *See*—
Anantha, Narasipur G.; Bhatia, Harsaran S.; Gaur, Santosh P.; and Pogge, Hans B., 4,196,440, Cl. 357-35.000.
Pohl, Walter J., to General Electric Company. Protective control circuit for induction motors. 4,196,462, Cl. 361-33.000.
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Ponza, Lorenzo J. Rotatable coating members for projecting a ball. 4,195,614, Cl. 124-1.000.
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Porter, Mark C.: *See*—
Chao, Kwang C.; and Porter, Mark C., 4,196,070, Cl. 204-266.000.
Potomac Applied Mechanics, Inc.: *See*—
Stubbings, James H., 4,195,407, Cl. 30-228.000.
Poulin, Raymond J., to Tacki-Mac Grips, Inc. Golf club grip. 4,195,837, Cl. 273-81.00R.
Povilaitis, Stanley A., to Crouse-Hinds Arrow Hart Inc. Sump pump switch. 4,196,325, Cl. 200-67.00A.
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PPG Industries, Inc.: *See*—
Jones, James E.; Temple, Rodger G.; Seiner, Jerome A.; Young, Sharon L.; and Boberski, William G., 4,196,107, Cl. 260-17.00R.
Krass, Dennis K., 4,196,126, Cl. 548-214.000.

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Bryzek, Janusz, 4,196,382, Cl. 323-75.00A.

Preobrazhensky, Alexandr Y.: *See*—
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Bell, Norman H., 4,195,732, Cl. 206-391.000.

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Beeker, Charles W.; and Pribyl, William J., Jr., 4,195,571, Cl. 102-89.0CD.

Price, Edward G.; and Rasmussen, Lewis C., to Beehive International. Wearable heart rate monitor. 4,195,642, Cl. 128-689.000.

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Priel, Ury; Gray, Jerry D.; and Frederick, Allen H., to Monolithic Memories, Inc. Fabrication of high resistivity semiconductor resistors by ion implanatation. 4,196,228, Cl. 427-88.000.

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Privas, Yves E., to Panoduz Anstalt. Process for depositing a conducting metal layer on an insulating support. 4,196,029, Cl. 156-89.000.

Process Scientific Innovations Ltd.: *See*—
Walker, Brian; Hunter, George S.; and Hunter, Susanne P., 4,196,027, Cl. 156-62.200.

Procter & Gamble Company, The: *See*—
Leveckis, Algis S.; and August, Gerald, 4,196,331, Cl. 219-10.55E.
Ogugha, Patrick C., 4,196,104, Cl. 252-542.000.

Productronix, Inc.: *See*—
Budraitis, Tadas; and Seliga, Gerald W., 4,195,563, Cl. 100-99.000.

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Morton, Robert S.; and Amrein, James R., 4,195,864, Cl. 283-56.000.

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Matej, Ronald J., 4,195,508, Cl. 72-93.000.
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Gutridge, Jack E., 4,195,576, Cl. 105-147.000.

Puschel, Walter: *See*—
Stolzenburg, Rudolf; Marx, Paul; and Puschel, Walter, 4,195,992, Cl. 430-242.000.

Puskadi, Frank, to Johnson & Johnson. Pressure-sensitive adhesive tape with primer. 4,196,254, Cl. 428-341.000.

Pyreflex Corporation: *See*—
Berg, Charles A., 4,195,820, Cl. 266-87.000.

Pysh, William A., to Techno Corporation. Surge protection valve. 4,195,657, Cl. 137-460.000.

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Patel, Mahesh S.; and Quaas, Joseph F., 4,196,237, Cl. 427-419.100.

Quayle, Lawrence L., to Maytag Company, The. Air inlet for a dishwashing apparatus. 4,195,419, Cl. 34-231.000.

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Hughes, John L., 4,195,914, Cl. 350-294.000.

Qurnell, Franklin D.; and Sauer, George A., to General Electric Company. Corrosion measuring apparatus for radioactive components. 4,196,048, Cl. 176-19.00R.

Raaf, Helmut; and Wagner, Helmar R., to Blendax-Werke R. Schneider. Dental and oral hygiene preparations. 4,196,189, Cl. 424-37.000.

Radloff, Frederick J.; and Krolak, Ronald F., to Bunker Ramo Corporation. Electrical connector with improved strain relief means. 4,195,899, Cl. 339-103.00M.

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Joines, William T.; Burton, Larry W.; Rafal, Marc D.; and Spock, Alexander, 4,195,641, Cl. 128-632.000.

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Rain Bird Sprinkler Mfg. Corp.: *See*—
Troup, Edward M., 4,195,782, Cl. 239-230.000.

Rancurel, Alain; and Grenier, Georges, to Laboratoires Pharmascience. Hydroxylated amines with bacteriostatic activity. 4,196,217, Cl. 424-316.000.

Rao, Vemulapalli D. N.; Howes, Benjamin T.; and Jaimee, Angelo, to Ford Motor Company. Low cost insertable type port liner. 4,195,478, Cl. 60-282.000.

Rapoport, Henry: *See*—
Hearst, John E.; Rapoport, Henry; Isaacs, Stephen; and Shen, Che-Kun J., 4,196,281, Cl. 536-28.000.

Rasmussen, Holger; and Jespersen, Paul N., to Georgia-Pacific Corporation. Method and apparatus for inserting end caps into cores of wound rolls. 4,195,399, Cl. 29-429.000.

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Price, Edward G.; and Rasmussen, Lewis C., 4,195,642, Cl. 128-689.000.

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Barthelmes, Rainer; and Rathel, Heinrich, 4,195,659, Cl. 137-501.000.

Rauch Industries, Inc.: *See*—
Wiggins, Anne L., 4,196,238, Cl. 428-11.000.

Ravagnani, Frederick J.: *See*—
Schonfeld, Steven E.; and Ravagnani, Frederick J., 4,195,679, Cl. 152-359.000.

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Vasquez, Christine M.; and Rawlins, Linda L., 4,195,496, Cl. 66-117.000.

Raychem Corporation: *See*—
Siden, Dennis C., 4,196,308, Cl. 174-84.00C.

Raycon Corporation: *See*—
Check, John M.; and Rupert, Gary F., 4,195,448, Cl. 51-165.770.

Raytheon Company: *See*—
Rowland, Howard J.; and deBettencourt, Joseph T., 4,196,329, Cl. 219-10.810.

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Kupperman, Sam; and Kupperman, Dennis, 4,195,707, Cl. 181-138.000.

RCA Corporation: *See*—
Carlson, David E., 4,196,438, Cl. 357-15.000.
Dingwall, Andrew G. F., 4,196,443, Cl. 357-68.000.
Engstrom, Ralph W.; and McDonie, Arthur F., 4,196,257, Cl. 428-457.000.
Hughes, Richard H., 4,196,370, Cl. 313-413.000.
Month, Alfred; and Benner, Timothy E., 4,196,372, Cl. 315-10.000.
Schnable, George L.; and Fisher, Albert W., 4,196,232, Cl. 527-255.300.
Spetgang, Irwin; and Brennan, James J., 4,196,457, Cl. 360-129.000.

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Glabe, Elmer F.; and Rebhan, Herbert J., 4,196,195, Cl. 424-177.000.

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Berninger, Walter H.; and Redington, Rowland W., 4,196,352, Cl. 250-445.00T.

Reduc Acoustics AB: *See*—
Hagbjer, Gunnar I.; and Sylwan, Odd B., 4,195,713, Cl. 188-1.00B.

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Heier, William, 4,195,754, Cl. 222-146.00C.

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Staudenmayer, William J.; Regan, Michael T.; Van Allan, James A.; and Yoerger, William E., 4,195,990, Cl. 430-70.000.

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Reick, Kenneth R.; Blumthal, William M.; and Hurwitz, Harold S., to Yorktown Industries, Inc. Cascade assembly and method. 4,195,591, Cl. 118-655.000.

Reid, Harry, Jr., to United States of America, National Aeronautics and Space Administration. Coal-shale interface detector. 4,195,512, Cl. 73-12.000.

Reiher, Max A. W., to J. Ray McDermott & Co., Inc. Method and apparatus for emergency transfer and life support of saturation divers. 4,195,949, Cl. 405-185.000.

Reil, Wilhelm, to Tetra Pak Development S.A. Apparatus for applying strips to coated web material. 4,196,035, Cl. 156-361.000.

Reinelt, Karlheinz: *See*—
Witt, Wolfram; and Reinelt, Karlheinz, 4,195,550, Cl. 89-27.00B.

Reiners, Franz-Josef; and Maasen, Wilhelm, to W. Schlafhorst & Co. Method and device for discontinuing operation of a winding device after a thread break occurs. 4,195,790, Cl. 242-37.00R.

Reishauer AG: *See*—
Angst, Arthur, 4,195,446, Cl. 51-105.0GG.

Rekewitz, Rudolf, to Siemens Aktiengesellschaft. Line control for platen printing devices. 4,195,940, Cl. 400-568.000.

Reliable Electric Company: *See*—
Ziegler, Hans J., 4,195,895, Cl. 339-14.00R.

Rennolds, Philip J., to Du Pont de Nemours, E. I., and Company. Corrugated interface zone refiner. 4,196,042, Cl. 156-616.00R.

Replogle, John A.; Clemmens, Albert J.; and Bell, Edward D., to United States of America, Agriculture. Measurement of water flow rate. 4,195,519, Cl. 73-215.000.

Republic Steel Corporation: *See*—
Ross, Benjamin J.; Toth, James M.; Abramczyk, Richard F.; and Coy, Gerald R., 4,195,530, Cl. 73-638.000.

Research Corporation: *See*—
Johnson, Francis; and Kim, Kyoung S., 4,196,127, Cl. 260-343.30R.

Resele, Peter, to Steyr-Daimler-Puch Aktiengesellschaft. Drive means for power-assisted bicycle. 4,195,705, Cl. 180-205.000.

Reser, G. Louis, to Sybron Corporation. Surgical table hydraulic system. 4,195,829, Cl. 269-325.000.

Reyes, Renato D.: *See*—
Burns, David C.; Shum, Lanson Y.; Reyes, Renato D.; Jacobs, Arthur F.; Morris, Duane W.; and Castner, Raymond P., 4,196,049, Cl. 176-19.00R.

Rhein, Robert A.; and Ingham, John D., to California Institute of Technology. Prepolymer dianhydrides. 4,196,129, Cl. 260-346.300.
Rheinmetall GmbH: *See*—
Leeker, Jurgen; Becker, Hanjorg; and Rombach, Rudolf, 4,195,573, Cl. 102-92.700.
Witt, Wolfram; and Reinelt, Karlheinz, 4,195,550, Cl. 89-27.00B.
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Morgan, Albert W.; and Ribaudo, Roland G., 4,196,005, Cl. 106-18.160.
Ricci, John D.; and Grant, John S. Reel holder with drag. 4,195,794, Cl. 242-99.000.
Richardson, George D., to Single Track Steer Pty. Limited. Vehicle suspension system. 4,195,863, Cl. 280-689.000.
Richdel, Inc.: *See*—
Firebaugh, Dale C., 4,195,621, Cl. 126-416.000.
Richter Gedeon Vegyeszeti Gyar RT: *See*—
Molnar, Arpad; Felfoldi, Karoly; Bartok, Mihaly; Karpati, Egon; and Szporny, Laszlo, 4,196,206, Cl. 424-250.000.
Richter, Virgil J., to Colgate-Palmolive Company. Colored detergents. 4,196,103, Cl. 252-541.000.
Ricoh Denshi Kogyo Kabushiki Kaisha: *See*—
Nishimura, Yasuhiko, 4,195,772, Cl. 235-441.000.
Ridgway Steel Fabricators, Inc.: *See*—
Scopetti, Frank A.; Vaughn, Eric; and Manno, Joseph T., 4,195,617, Cl. 126-5.000.
Riedmuller, Eberhard: *See*—
Spieth, Ernst K.; Murso, Bernhard; and Riedmuller, Eberhard, 4,195,840, Cl. 273-406.000.
Rieke Corporation: *See*—
Fee, Max J., 4,195,750, Cl. 220-288.000.
Riley, Timothy J.; Vecchiarelli, Nicholas; and Fritz, Richard A., to International Business Machines Corporation. Batch production of plasma display panels. 4,195,892, Cl. 316-20.000.
Ritchey, Eugene B. Ear tag installing tool. 4,195,635, Cl. 128-330.000.
Rivera-Cruz, Luis. Energy generating device. 4,195,486, Cl. 60-675.000.
Riviana Foods, Inc.: *See*—
Campbell, S. Jack, 4,195,756, Cl. 222-182.000.
Robert Bosch GmbH: *See*—
Anlauf, Jurgen; and Schnurle, Hans, 4,195,598, Cl. 123-32.0EA.
Barthelmes, Rainer; and Rathel, Heinrich, 4,195,659, Cl. 137-501.000.
Decker, Heinz; and Sohner, Gerhard, 4,195,603, Cl. 123-117.00R.
Jakob, Gert; and Maue, Hans-H., 4,196,467, Cl. 361-399.000.
Worz, Paul; Kaufmann, Reinhold; Ehrmann, Karl; Issler, Jorg; and Weiss, Gunther, 4,195,611, Cl. 123-148.00D.
Roberts, Marvin E. Rotary disc-tumbler lock cylinder. 4,195,503, Cl. 70-366.000.
Roberts, Roy D.; and Lavering, Gordon R., to United States of America, Army. Thermally sensitive pressure release assembly for sealed pressurized vessel. 4,195,745, Cl. 220-2.200.
Robertshaw Controls Company: *See*—
Steele, Everett T., Jr., 4,195,663, Cl. 137-599.200.
Robinson, Donovan L., to General Motors Corporation. Gas turbine with forward and reverse marine drive. 4,195,472, Cl. 60-39.16S.
Robinson, Raymond G. Electrically lighted sight for an archery bow. 4,195,414, Cl. 33-265.000.
Roccaforte, Harry I.; Hanko, Jimmy; and Schillinger, Joseph F., to Champion International Corporation. Carton with integral handle. 4,195,765, Cl. 229-52.00B.
Rodrigue, Wilbrod. Fluid suction device. 4,195,440, Cl. 47-12.000.
Rodrigue, Wilbrod. Projectile target with removable rods. 4,195,839, Cl. 273-346.000.
Rogers, Charles D.; and Fowler, Joseph A., to United States Steel Corporation. Drilling optimization searching and control method. 4,195,699, Cl. 175-27.000.
Rogers, John W. Coil breakaway apparatus. 4,195,759, Cl. 225-103.000.
Rogerson, Jerry B.; and Harrison, Robert S., to Ford Motor Company. Carburetor with limited interconnected choke valve and fast idle cam. 4,196,156, Cl. 261-39.00B.
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Rolando, Pierluigi, to Maglificio Biellese Fratelli Fila S.p.A. Shock resistant jacket. 4,195,362, Cl. 2-2.000.
Roley, Robert D.; and Sturges, James R., to Caterpillar Tractor Co. End face seal assembly. 4,195,852, Cl. 277-92.000.
Roman, Charles A., to Dayco Corporation. Wall covering and method of making same. 4,196,244, Cl. 428-159.000.
Rombach, Rudolf: *See*—
Leeker, Jurgen; Becker, Hanjorg; and Rombach, Rudolf, 4,195,573, Cl. 102-92.700.
Roncaglione, Walter. Dry ice refrigerator. 4,195,491, Cl. 62-384.000.
Ronnhult, John F.; Petersen, Bjarne L.; and Sjostrom, Staffan S., to Saab-Scania Aktiebolag. Arrangement for damping oscillating movements in vehicle seats. 4,195,883, Cl. 297-302.000.
Rosemberg, Eugenia. Hybrid choripnic gonadotropin preparations and methods for stimulating ovulation using same. 4,196,123, Cl. 424-177.000.
Rosenquist, Kurt E.: *See*—
Hyman, David L.; Cayton, Robert J.; and Rosenquist, Kurt E., 4,195,680, Cl. 160-166.00A.
Rosenqvist, Nils K. G., to Kommanditbolaget United Stirling (Sweden) AB & Co. Multi-cylinder double-acting hot gas engine. 4,195,554, Cl. 92-146.000.
Roskott, Lodewijk; and Schroeder, Arnold, to Akzona Incorporated. Process for the preparation of a copolymerizable composition. 4,196,269, Cl. 525-27.000.
Ross, Benjamin J.; Toth, James M.; Abramczyk, Richard F.; and Coy, Gerald R., to Republic Steel Corporation. Ultrasonic inspection. 4,195,530, Cl. 73-638.000.
Roussel Uclaf: *See*—
Dumont, Claude; Guillaume, Jacques; and Nedelec, Lucien, 4,196,209, Cl. 424-267.000.
Heymes, Rene; and Lutz, Andre, 4,196,205, Cl. 424-246.000.
Rowe, Arthur J., to Carrier Drysys Limited. Treating automobile bodies. 4,196,023, Cl. 148-6.15R.
Rowe, William A.; and Schwartz, James W., to Zenith Radio Corporation. Television picture tube having enhanced resolution and color purity. 4,196,446, Cl. 358-74.000.
Rowland, Howard J.; and deBettencourt, Joseph T., to Raytheon Company. Situ processing of organic ore bodies. 4,196,329, Cl. 219-10.810.
Roye, Henry L. Radial mining method. 4,195,886, Cl. 299-11.000.
RTE Corporation: *See*—
Link, Edwin A., 4,196,408, Cl. 336-94.000.
Rudberg, Harry I. A. Method and apparatus for measuring low concentrations of chlorine and chlorine oxide. 4,196,427, Cl. 340-634.000.
Ruddell, Adrian, to Burke Industries, Inc. Elastomeric bushings. 4,195,887, Cl. 305-42.000.
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Rupert, Gary F.: *See*—
Check, John M.; and Rupert, Gary F., 4,195,448, Cl. 51-165.770.
Russell, David D., to Eaton Corporation. Semi-conductive layer-containing reinforced pressure hose and method of making same. 4,196,464, Cl. 361-215.000.
Russell, Jack A.; Pratt, Goodrich B.; and Gretzky, Anthony J., to Brunswick Corporation. Golf game projector. 4,195,920, Cl. 353-26.00A.
Russell, Ronald W.: *See*—
Culmer, Daniel D.; and Russell, Ronald W., 4,196,420, Cl. 340-347.0AD.
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Rust, Rudolph. Large area parabolic concentrating solar collector. 4,195,620, Cl. 126-425.000.
Rutherford, David B.: *See*—
Sluis, Mark H.; Auer, John H., Jr.; Shook, Carl G.; Anderson, Robert F.; and Rutherford, David B., 4,196,412, Cl. 340-32.000.
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Jewett, Charles S.; and Ruzicka, Harry L., 4,196,337, Cl. 219-121.0EM.
Ryczek, William G., to Allis-Chalmers Corporation. Stone guard for harvesters. 4,195,644, Cl. 130-27.0JT.
Ryer, Jack; Zielinski, James; Miller, Harold N.; and Brois, Stanley J., to Exxon Research & Engineering Co. Additive useful in oleaginous compositions. 4,195,976, Cl. 44-63.000.
Rysti, Alpo. Method and apparatus for handling elongated articles, such as pieces of timber. 4,195,737, Cl. 209-521.000.
S.A.E.S. Getters S.p.A.: *See*—
Hellier, Stephen J., 4,195,891, Cl. 316-5.000.
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Ronnhult, John F.; Petersen, Bjarne L.; and Sjostrom, Staffan S., 4,195,883, Cl. 297-302.000.
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Sachs, Peter R.; and Thomas, George, to GAF Corporation. Non-skid floor covering. 4,196,243, Cl. 428-147.000.
Safford, George J.: *See*—
Eddy, Clifford O.; Safford, George J.; and Bowler, Edward F., Jr., 4,196,256, Cl. 428-422.000.
Safir, Sidney R.: *See*—
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Saiki, Noritsugu: *See*—
Azuma, Shizuo; Saiki, Noritsugu; and Kawase, Shoji, 4,196,279, Cl. 528-275.000.
Saint-Gobain Industries: *See*—
Edel, Hans D., 4,196,338, Cl. 219-203.000.
Saito, Hiroyasu; and Sekiguchi, Akio, to Nippon Kasei Chemical Co., Ltd. Process for producing triallyl isocyanurate. 4,196,289, Cl. 544-221.000.
Sakai, Yutaka: *See*—
Doi, Yoshikazu; Sakai, Yutaka; and Ohono, Kazunori, 4,195,912, Cl. 350-184.000.
Sakowski, Walter J., to Olin Corporation. Lime recovery process. 4,196,184, Cl. 423-639.000.
Salem, Robert J., to General Electric Company. Ultrasonic control device. 4,196,406, Cl. 333-141.000.
Sallay, Stephen I. Process for producing boron compounds from borate ores. 4,196,177, Cl. 423-279.000.

Sally, Theodore J.: *See*—
Morris, Earl L.; Hafner, Walter V.; and Sally, Theodore J., 4,195,374, Cl. 4-427.000.

Salokangas, Teuvo T.; Lammi, Unto T.; and Miettinen, Tapani J., to Asko-Upo Oy; and AGA Heating AB. Combination of a biological dry toilet and a biological waste water purifying plant. 4,196,082, Cl. 210-180.000.

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Samoilenko, Petr B.: *See*—
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Madoian, Ashot A.; Kantsedalov, Viktor G.; Samoilenko, Petr B.; and Samoilenko, Valentin P., 4,195,529, Cl. 73-638.000.

Sanada, Masakatsu; Ito, Toshimitsu; and Nakada, Masahiko, to Toyota Jidosha Kogyo Kabushiki Kaisha. Fuel supply system for engines. 4,195,608, Cl. 123-136.000.

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Sandeffer, H. Dale: *See*—
Craven, Jack L.; Marjoram, Ernest B.; Sandeffer, H. Dale; and Stewart, Charles J., 4,195,923, Cl. 354-91.000.

Sanderson, Roger S.; and Whelchel, Robert C., to Sanderson, Roger S. Sterilized storage container. 4,196,166, Cl. 422-33.000.

Sandhu, M. Akram: *See*—
Martin, Thomas W.; and Sandhu, M. Akram, 4,196,009, Cl. 430-7.000.

Sandhu, Mohammad A., to Eastman Kodak Company. Color filter arrays and color imaging devices. 4,196,010, Cl. 430-7.000.

Sandoz Ltd.: *See*—
Fleck, Fritz; and Heller, Juerg, 4,196,229, Cl. 427-158.000.

Sangani, Suresh H.: *See*—
Benton, Michael K.; and Sangani, Suresh H., 4,195,770, Cl. 371-21.000.

Santandrea, Joseph F.; and Schell, Daniel, to Monosil, Incorporated. Electronic game with varying event probabilities. 4,195,838, Cl. 273-88.000.

Sarantakis, Dimitrios, to American Home Products Corporation. Analgesic polypeptide. 4,196,122, Cl. 260-112.50R.

Saravis, Calvin A., to United States of America, Health, Education and Welfare. Dialysis solution handling device. 4,196,085, Cl. 210-232.000.

Satcher, Joe H., Jr.: *See*—
Melville, James C.; Beatty, Joseph M., II; and Satcher, Joe H., Jr., 4,196,017, Cl. 127-41.000.

Satee, Raichur, to Chemray Corporation. Direct nickel-plating of aluminum. 4,196,061, Cl. 204-33.000.

Sato, Reisuke: *See*—
Okatani, Masanao; Onishi, Hiroshi; Ishibashi, Yoshiaki; Sato, Reisuke; Suganuma, Hisashi; Yokogawa, Tomohisa; Ueki, Yoshiharu; Kama, Haruo; Kosuga, Tadashi; and Ogawa, Tadashi, 4,196,395, Cl. 455-154.000.

Satya, Akella V. S.: *See*—
Kelly, Helen J.; Perlman, David J.; and Satya, Akella V. S., 4,196,389, Cl. 324-158.00R.

Sauder, Reinhold. Roof structure. 4,195,454, Cl. 52-92.000.

Sauer, George A.: *See*—
Qurnell, Franklin D.; and Sauer, George A., 4,196,048, Cl. 176-19.00R.

Saunders Archery Company: *See*—
Saunders, Charles A., 4,195,397, Cl. 29-235.000.

Saunders, Charles A., to Saunders Archery Company. Compound bow stringer. 4,195,397, Cl. 29-235.000.

Sawyer, George M. Plant-like chemical growths and apparatus to display same. 4,196,239, Cl. 428-17.000.

Sawyer, John M.; and Harris, John R., to Goodyear Tire & Rubber Company, The. Coated fabric belt. 4,196,252, Cl. 428-246.000.

Scarpa, Annamaria; and Zanobini, Franco. Portable cutting-tool sharpener. 4,195,449, Cl. 51-170.0EB.

Schacht, Erich: *See*—
Gante, Joachim; Kurmeier, Hans-Adolf; Orth, Dieter; Schacht, Erich; and Wild, Albrecht, 4,196,215, Cl. 424-308.000.

Scheibitz, Wolfgang: *See*—
Wojtech, Bernhard; Ehlers, Klaus P.; and Scheibitz, Wolfgang, 4,196,180, Cl. 423-321.00S.

Scheifley, John C.; Shields, Clark R.; and Busby, David E., to Dow Chemical Company, The. Combustion of halogenated hydrocarbons. 4,195,596, Cl. 122-149.000.

Schell, Daniel: *See*—
Santandrea, Joseph F.; and Schell, Daniel, 4,195,838, Cl. 273-88.000.

Schenectady Chemicals, Inc.: *See*—
Laganis, Deno; and Garis, Eric V., 4,196,109, Cl. 260-20.000.

Schering Aktiengesellschaft: *See*—
Kapp, Joachim-Friedrich; Kieslich, Kalus; Laurent, Henry; and Petzoldt, Karl, 4,196,203, Cl. 424-242.000.
Petzoldt, Karl; Steinbeck, Hermann; and Elger, Walter, 4,196,204, Cl. 424-243.000.

Schering Corporation: *See*—
Gold, Elijah H.; and Solomon, Daniel M., 4,196,124, Cl. 260-239.00A.

Schiethart, Lodewijk, to Heemaf B.V. Synchronous motor. 4,196,366, Cl. 310-162.000.

Schillinger, Joseph F.: *See*—
Roccaforte, Harry I.; Hanko, Jimmy; and Schillinger, Joseph F., 4,195,765, Cl. 229-52.00B.

Schinner, Edward N., to Baltimore Aircoil Company, Inc. Evaporative counterflow heat exchange. 4,196,157, Cl. 261-155.000.

Schittek, Friedrich: *See*—
Willenbrock, Helmut; and Schittek, Friedrich, 4,196,384, Cl. 324-446.000.

Schlicht, Raymond C., to Texaco Inc. Lactam carboxylic acids, their method of preparation and use. 4,196,091, Cl. 252-51.50A.

Schmidt, Donald L.: *See*—
Klingler, Thomas C.; and Schmidt, Donald L., 4,196,298, Cl. 549-77.000.

Schmiel, Herbert H., to Gresen Manufacturing Company. Hydraulic control valve including electromagnetic detent. 4,195,551, Cl. 91-358.00A.

Schmitt, Frederick L.: *See*—
Trenkle, Robert W.; Mookherjee, Braja D.; Kasper, Robin; Vock, Manfred H.; Vinals, Joaquin; Kiwala, Jacob; and Schmitt, Frederick L., 4,196,306, Cl. 568-824.000.

Schmitt, Robert A., to Columbia Machine, Inc. Article stacking apparatus. 4,195,959, Cl. 414-35.000.

Schmohe, James S., to Sundstrand Corporation. Retractable shaft structure. 4,195,718, Cl. 192-67.00R.

Schnable, George L.; and Fisher, Albert W., to RCA Corporation. Method of chemically vapor-depositing a low-stress glass layer. 4,196,232, Cl. 527-255.300.

Schneider, Herbert: *See*—
Voss, Gunter M.; and Schneider, Herbert, 4,195,587, Cl. 114-218.000.

Schneider Medintag AG: *See*—
Gruntzig, Andreas; and Gleichner, Hans, 4,195,637, Cl. 128-348.000.

Schneider, Rainer: *See*—
Abeler, Gerd; and Schneider, Rainer, 4,196,110, Cl. 260-23.0XA.

Schneidewind, Edward A.: *See*—
Tundo, Frank; and Schneidewind, Edward A., 4,195,866, Cl. 292-127.000.

Schnurle, Hans: *See*—
Anlauf, Jurgen; and Schnurle, Hans, 4,195,598, Cl. 123-32.0EA.

Scholz, David C., to Moulton Irrigation Company. Self-propelled irrigation apparatus. 4,195,781, Cl. 239-177.000.

Schonfeld, Steven E.; and Ravagnani, Frederick J., to Firestone Tire & Rubber Company, The. Composition and product with improved adhesion between a metal member and a contiguous cured rubber skim stock. 4,195,679, Cl. 152-359.000.

Schoonmaker, Charles D.: *See*—
Bardsley, Robert F.; Bortkevicius, Jonas; and Schoonmaker, Charles D., 4,195,559, Cl. 99-353.000.

Schotte, Dietwald: *See*—
Gaus, Harry; Milutziki, Udo; and Schotte, Dietwald, 4,195,846, Cl. 274-15.00R.

Schotten, Alfons, to Eberhard Hoesch & Sohne GmbH & Co. Plate filter press. 4,196,084, Cl. 210-224.000.

Schreckenberg, Manfred; Konig, Klaus; Freitag, Dieter; and Serini, Volker, to Bayer Aktiengesellschaft. High-molecular weight, segmented, polycarbonate elastomers. 4,196,276, Cl. 528-176.000.

Schreckendgust, Jay G., to Sybron Corporation. Major surgical light. 4,196,460, Cl. 362-231.000.

Schrick, Richard I.: *See*—
Laskowski, Gordon J.; and Schrick, Richard I., 4,195,962, Cl. 414-659.000.

Schroder, Peter: *See*—
Busch, Heinz; and Schroder, Peter, 4,195,693, Cl. 169-53.000.

Schroeder, Arnold: *See*—
Roskott, Lodewijk; and Schroeder, Arnold, 4,196,269, Cl. 525-27.000.

Schroeder, Nancy: *See*—
Farina, Minnie, 4,195,372, Cl. 4-234.000.

Schroeder, Thaddeus: *See*—
Johnston, Richard W.; Neuman, John G.; Schroeder, Thaddeus; and Traub, Norman L., 4,195,673, Cl. 141-349.000.

Schubart, Rudiger: *See*—
Kranz, Eckart; Schubart, Rudiger; Schwarz, Herbert; Siegle, Peter; and Steude, Heinrich, 4,196,150, Cl. 260-593.00H.

Schubert, Paul F., to Merck & Co., Inc. Antibiotic purification process. 4,196,285, Cl. 544-20.000.

Schulte, Klaus: *See*—
Ebeling, Wilfried; Schulte, Klaus; and Kreuer, Dieter, 4,195,527, Cl. 73-434.000.

Schultz, Charles A., Jr.: *See*—
Forman, Aubry S.; Schultz, Charles A., Jr.; and Schultz, John F., 4,196,310, Cl. 178-22.000.

Schultz, John F.: *See*—
Forman, Aubry S.; Schultz, Charles A., Jr.; and Schultz, John F., 4,196,310, Cl. 178-22.000.

Schulz, Gunter; and Klein, Konrad, to Zinser Textilmaschinen GmbH. Filament-drawing assembly for spinning machine. 4,195,389, Cl. 19-293.000.

Schulz, Jerry D.; and Faulkner, Bobby P., to Allis-Chalmers Corporation. Selective reduction of nickel laterite ores. 4,195,986, Cl. 75-82.000.

Schulze, Ehrhart, to Stiegler, Karl-Heinz. Conveyor with downward step for stacked sheets of film material. 4,195,960, Cl. 414-49.000.

Schurhoff, Walter: *See*—
Muller-Spath, Erich; Muller, Konrad; Kister, Heinz; Schurhoff, Walter; Hillnhutter, Friedrich W.; and Laucht, Walter, 4,196,078, Cl. 210-75.000.

Schurig, Helmut: *See*—
Mose, Luciano; Schurig, Helmut; and Strasser, Bernd, 4,196,069, Cl. 204-257.000.

Schuster, Wilhelm; Wollmann, Klaus; and Stahl, Jurgen, to Filztuchverwaltungs-GmbH. Pintle wire for high load hinge connections. 4,195,549, Cl. 87-1.000.

Schwartz, James W.: *See*—
Rowe, William A.; and Schwartz, James W., 4,196,446, Cl. 358-74.000.

Schwarz, Cornelia: *See*—
Hofbauer, Peter; and Schwarz, Cornelia, 4,195,597, Cl. 123-30.00C.

Schwarz, Herbert: *See*—
Kranz, Eckart; Schubart, Rudiger; Schwarz, Herbert; Siegle, Peter; and Steude, Heinrich, 4,196,150, Cl. 260-593.00H.

Schweingruber, Otto: *See*—
Ullmann, Roland; Schweingruber, Otto; and Oprach, Klaus, 4,195,650, Cl. 132-83.00R.

Schweitzer, Harold P., to Glar Ban Company. Microwave signal detector. 4,196,393, Cl. 340-600.000.

Schweitzer, Walter, to Krauss u. Reichert GmbH & Co. KG Spezialmaschinenfabrik. Cutting machine with an oscillating knife. 4,195,404, Cl. 30-139.000.

Schweizer, Helgi-Jon. Device for the production and application of body stimuli structures. 4,195,626, Cl. 128-774.000.

SCI Systems, Inc.: *See*—
Gard, Leslie H.; and Phillips, Darwin E., 4,195,936, Cl. 400-124.000.

Scientific Technologies, Inc.: *See*—
Amen, Randall M., 4,195,390, Cl. 29-421.00R.

SCM Corporation: *See*—
Kane, Bernard J.; and Traynor, Sean G., 4,196,303, Cl. 560-126.000.
Sturgeon, Lloyd F.; and Tice, George M., 4,195,418, Cl. 34-216.000.

Scopetti, Frank A.; Vaughn, Eric; and Manno, Joseph T., to Ridgway Steel Fabricators, Inc. Wood burning water-circulating stove. 4,195,617, Cl. 126-5.000.

Scott Paper Company: *See*—
Singh, Rudra P., 4,196,043, Cl. 162-30.00K.

Scoville, Frank J. Chlorine gas producing apparatus. 4,196,068, Cl. 204-255.000.

Scribner, Albert W. Pneumatic feeder for punch presses and the like. 4,195,761, Cl. 226-115.000.

Sealed Air Corporation: *See*—
Sperry, Charles R., 4,196,160, Cl. 264-40.400.

Secrist, John L.: *See*—
Shaw, Carol P.; Secrist, John L.; and Tuomy, Justin M., 4,196,219, Cl. 426-89.000.

Sehlbach, Gerd; and Klischat, Ditmar, to Gelenkwellenbau GmbH. Universal joint. 4,195,495, Cl. 64-17.00R.

Seifert, Christian, to Stettner & Co. Electrical galvanic bath contact element. 4,196,058, Cl. 204-15.000.

Seiler, Claus-Dietrich; and Vahlensieck, Hans-Joachim, to Dynamit Nobel Aktiengesellschaft. Process for the production of ethylsilanes. 4,196,139, Cl. 556-479.000.

Seiner, Jerome A.: *See*—
Jones, James E.; Temple, Rodger G.; Seiner, Jerome A.; Young, Sharon L.; and Boberski, William G., 4,196,107, Cl. 260-17.00R.

Sekiguchi, Akio: *See*—
Saito, Hiroyasu; and Sekiguchi, Akio, 4,196,289, Cl. 544-221.000.

Seliga, Gerald W.: *See*—
Budraitis, Tadas; and Seliga, Gerald W., 4,195,563, Cl. 100-99.000.

Semon, William J. Casket corner piece. 4,195,394, Cl. 27-10.000.

Seo, Yuji: *See*—
Watanabe, Seizaburo; Seo, Yuji; Hattori, Eiji; Okuda, Masao; and Watanabe, Hiroshi, 4,196,267, Cl. 521-93.000.

Seranne, Michel F.: *See*—
Keeling, Ralph R.; and Seranne, Michel F., 4,195,442, Cl. 49-35.000.

Serini, Volker: *See*—
Schreckenberg, Manfred; Konig, Klaus; Freitag, Dieter; and Serini, Volker, 4,196,276, Cl. 528-176.000.

Sessler, John A. Automatic transmission. 4,195,537, Cl. 74-781.00R.

Seubert, Jurgen; Thomas, Herbert; and Andrews, Peter, to Merck Patent Gesellschaft mit beschraenkter Haftung. 2-Acyl-4-oxo-pyrazino-isoquinoline derivatives and process for the preparation thereof. 4,196,291, Cl. 544-344.000.

Shank, Joseph L., to Wilson Foods Corporation. Method of preparing sausage casings from pig skins. 4,196,223, Cl. 426-268.000.

Shapiro, Semen V.; Gutin, Leonid I.; Kiyamov, Rinat N.; Okhotnikov, Viktor A.; Roginskaya, Ljubov E.; Kazantsev, Vladimir G.; and Novichkov, Vladimir E., to Ufimsky Aviatsionny Institut. Series-type independent inverter. 4,196,468, Cl. 363-75.000.

Sharp Kabushiki Kaisha: *See*—
Kuwagaki, Hiroshi; Hishida, Tadanori; Yano, Kohzo; and Inami, Yasuhiko, 4,195,917, Cl. 350-357.000.

Shatagin, Oleg A.: *See*—
Sladkoshteev, Vladimir T.; Shatagin, Oleg A.; Khalemsky, Samuil F.; Sachko, Viktor V.; Abraimov, Boris F.; Manokhin, Anatoly I.; Mishin, Petr P.; Druzhinin, Valery P.; Nechaev, Leonid S.; Kozachenko, Stanislav M.; and Kuchminsky, Jury M., 4,195,685, Cl. 164-420.000.

Shaughnessy, Christopher M.: *See*—
Erbstoesser, Steven R.; and Shaughnessy, Christopher M., 4,195,690, Cl. 166-281.000.

Shaver, Michael R. Portable flow-measuring device. 4,195,520, Cl. 73-215.000.

Shaw, Carol P.; Secrist, John L.; and Tuomy, Justin M., to United States of America, Army. Method of extending the storage life in the frozen state of precooked foods and product produced. 4,196,219, Cl. 426-89.000.

Shay, Joseph L.; and Wagner, Sigurd, to Bell Telephone Laboratories, Incorporated. Semiconductor devices with enhanced properties. 4,196,263, Cl. 429-111.000.

Shea Inventive Designs, Inc.: *See*—
Shea, Robert H., 4,195,721, Cl. 192-105.0CD.

Shea, Robert H., to Shea Inventive Designs, Inc. Torque exchange coupling. 4,195,721, Cl. 192-105.0CD.

Shelby, Robert L.; and Behrends, Bertwin E., to Caterpillar Tractor Co. Manifolded multiple hydraulic pump structure. 4,195,480, Cl. 60-486.000.

Shelton, William A. Contact lens with reduced spherical aberration for aphakic eyes. 4,195,919, Cl. 351-160.00R.

Shen, Che-Kun J.: *See*—
Hearst, John E.; Rapoport, Henry; Isaacs, Stephen; and Shen, Che-Kun J., 4,196,281, Cl. 536-28.000.

Shentov, Ivan P.: *See*—
Petrov, Dimiter A.; Shentov, Ivan P.; and Genevski, Vladimir V., 4,196,059, Cl. 204-28.000.

Shepherd, Robert G., to American Cyanamid Company. Certain pyridyl esters of 4-(monoalkylamino) benzoic hydroxyalkanoic acids. 4,196,208, Cl. 424-263.000.

Shiba, Haruo: *See*—
Okamura, Masatoshi; and Shiba, Haruo, 4,195,797, Cl. 242-199.000.

Shielding, Inc.: *See*—
Maine, Gayle J., 4,196,355, Cl. 250-516.000.

Shields, Clark R.: *See*—
Scheifley, John C.; Shields, Clark R.; and Busby, David E., 4,195,596, Cl. 122-149.000.

Shih, David H.: *See*—
Christensen, Burton G.; and Shih, David H., 4,196,211, Cl. 424-274.000.

Shim-A-Line, Inc.: *See*—
Specktor, Gerald A.; and Solberg, John W., 4,195,862, Cl. 280-661.000.

Shimada, Shinichi: *See*—
Yamazaki, Shuichi; and Shimada, Shinichi, 4,195,477, Cl. 60-282.000.

Shimizu, Mamoru: *See*—
Suyama, Shuji; and Shimizu, Mamoru, 4,196,151, Cl. 260-601.00R.

Shimizu, Takeshi: *See*—
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Shimomai, Akiro: *See*—
Fujie, Hiroshi; Kai, Osamu; Masunaga, Eiji; Sumitani, Etuo; and Shimomai, Akiro, 4,196,118, Cl. 260-45.70P.

Shimonovich, Shraga. Device for positioning livestock. 4,195,595, Cl. 119-103.000.

Shin-Etsu Chemical Co. Ltd.: *See*—
Imai, Kiyoshi; and Tanaka, Masaki, 4,196,273, Cl. 528-15.000.

Shingai, Yoshisuke, to Yamaha Hatsudoki Kabushiki Kaisha. Crankcase chamber compression type two cycle internal combustion engines. 4,195,600, Cl. 123-73.0AA.

Shinshu Seiki Kabushiki Kaisha: *See*—
Yamada, Tsutomu, 4,196,349, Cl. 250-231.0SE.

Shiokawa, Hiroyasu. Machine press. 4,195,564, Cl. 100-231.000.

Shirai, Hiroshi, to Tae-Weon, Mo. Circuit for detecting a positive phase or an opposite phase in three phase alternating power source. 4,196,378, Cl. 318-438.000.

Shiseki, Yutaka: *See*—
Watanabe, Katsumi; Shiseki, Yutaka; and Koike, Eishi, 4,195,843, Cl. 274-1.00A.

Shoemaker, Alan K.: *See*—
Ives, Kenneth D.; McCartney, Raymond F.; and Shoemaker, Alan K., 4,195,669, Cl. 138-178.000.

Shook, Carl G.: *See*—
Sluis, Mark H.; Auer, John H., Jr.; Shook, Carl G.; Anderson, Robert F.; and Rutherford, David B., 4,196,412, Cl. 340-32.000.

Shterenberg, Ljudmila E.: *See*—
Vereschagin, Leonid F.; Yakovlev, Evgeny N.; Slesarev, Vladislav N.; Stepanov, Vasily A.; Preobrazhensky, Alexandr Y.; Varfolomeeva, Tatyana D.; and Shterenberg, Ljudmila E., 4,196,181, Cl. 423-446.000.

Shum, Lanson Y.: *See*—
Burns, David C.; Shum, Lanson Y.; Reyes, Renato D.; Jacobs, Arthur F.; Morris, Duane W.; and Castner, Raymond P., 4,196,049, Cl. 176-19.00R.

Shumaker, Lawrence W.: *See*—
Anderson, Larry L.; Shumaker, Lawrence W.; and Van Rens, Russell J., 4,195,722, Cl. 192-131.00R.

Siciliano, Anthony J., to Diamond International Corporation. Poultry cage system. 4,195,592, Cl. 119-17.000.

Siciliano, Anthony J.; and Artamonoff, Serge, to Diamond International Corporation. Feeding system for animals. 4,195,594, Cl. 119-52.00B.

Siden, Dennis C., to Raychem Corporation. Insulated crimp splicer. 4,196,308, Cl. 174-84.00C.

Siden, LeRoy E.: *See—*
Hujsak, Edward J.; and Siden, LeRoy E., 4,195,804, Cl. 244-161.000.

Siebold, Donald J.: *See—*
Evans, Ross M., Jr.; and Siebold, Donald J., 4,196,340, Cl. 219-245.000.

Siegle, Peter: *See—*
Kranz, Eckart; Schubart, Rudiger; Schwarz, Herbert; Siegle, Peter; and Steude, Heinrich, 4,196,150, Cl. 260-593.00H.

Siemens Aktiengesellschaft: *See—*
Krumrey, Guenter, 4,195,832, Cl. 271-274.000.
Rekewitz, Rudolf, 4,195,940, Cl. 400-568.000.
Weinke, Robert; and Wiesmeier, Georg, 4,195,826, Cl. 267-137.000.

SIG - Schweizerische Industrie-Gesellschaft: *See—*
Loewenthal, Horst, 4,195,723, Cl. 198-461.000.

Sigl, Edward D.: *See—*
Herr, Robert W.; and Sigl, Edward D., 4,195,768, Cl. 235-103.000.

Signorelli, Louis: *See—*
Faure, Alain J.; Geoffroy, Alain Y.; and Signorelli, Louis, 4,195,803, Cl. 244-111.000.

Silver, Alexander; and Wenban, James R., to Garrett Corporation, The. Method of rotatably supporting two members with a foil bearing having a stiffener. 4,195,395, Cl. 29-149.50S.

Silverman, Mark H.: *See—*
Parker, Wendell R.; Silverman, Mark H.; and Warner, Willis L., 4,195,632, Cl. 128-272.000.

Simon, Eric. Grinding of pigments. 4,196,016, Cl. 106-309.000.

Simone, Andre A.; Ogren, Dennis F.; Adams, William R.; and Kohn, Harold B., to Lummus Company, The. Gravity settling process. 4,196,080, Cl. 210-83.000.

Singer Company, The: *See—*
Hill, Emile R.; and De Leo, Louis P., 4,196,397, Cl. 330-84.000.
Kanerva, Robert A.; and Bailey, James E., 4,195,656, Cl. 137-458.000.
Matsumoto, Setsuo, 4,195,583, Cl. 112-158.00A.

Singh, Rudra P., to Scott Paper Company. Kraft pulp bleaching and recovery process. 4,196,043, Cl. 162-30.00K.

Single Track Steer Pty. Limited: *See—*
Richardson, George D., 4,195,863, Cl. 280-689.000.

Singleton, Russell M., to United States of America, Energy. Microradiographic microsphere manipulator. 4,196,353, Cl. 250-456.000.

SIPAVEL-Sociedade de Isolamentos Para Veiculos, Lda.: *See—*
Stichter, Gunter, 4,196,162, Cl. 264-131.000.

Sjostrom, Staffan S.: *See—*
Ronnhult, John F.; Petersen, Bjarne L.; and Sjostrom, Staffan S., 4,195,883, Cl. 297-302.000.

Skaalen, Clifford I.; and Kling, Philip M., to United States of America, Navy. Remote controlled safety hook. 4,195,872, Cl. 294-82.00R.

Sladkoshteev, Vladimir T.; Shatagin, Oleg A.; Khalemsky, Samuil F.; Sachko, Viktor V.; Abraimov, Boris F.; Manokhin, Anatoly I.; Mishin, Petr P.; Druzhinin, Valery P.; Nechaev, Leonid S.; Kozachenko, Stanislav M.; and Kuchminsky, Jury M. Horizontal continuous casting apparatus. 4,195,685, Cl. 164-420.000.

Slautterback, Fred A.; and Honeyman, R. Blakeley, to Lockwood Technical, Inc. Apparatus for dispensing thermoplastic material from containers. 4,195,755, Cl. 222-146.0HE.

Slavens, Clyde M., to Midcon Pipeline Equipment Co. Apparatus for locating welding carriage track. 4,195,763, Cl. 228-29.000.

Slesarev, Vladislav N.: *See—*
Vereschagin, Leonid F.; Yakovlev, Evgeny N.; Slesarev, Vladislav N.; Stepanov, Vasily A.; Preobrazhensky, Alexandr Y.; Varfolomeeva, Tatyana D.; and Shterenberg, Ljudmila E., 4,196,181, Cl. 423-446.000.

Slettenhaar-von Piekartz, Maria L. A.: *See—*
Hinze, Adrien G.; Stigter, Hendrik G.; and Slettenhaar-von Piekartz, Maria L. A., 4,196,108, Cl. 260-18.00N.

Sluis, Mark H.; Auer, John H., Jr.; Shook, Carl G.; Anderson, Robert F.; and Rutherford, David B., to General Signal Corporation. Driver alert system. 4,196,412, Cl. 340-32.000.

Smirl, Richard L.: *See—*
Clauss, Julius A.; Ivey, John S.; and Smirl, Richard L., 4,195,536, Cl. 74-759.000.

Smith, David B., to Brooke Bond Vending Systems Limited. Cup selection apparatus for beverage vending machine to the in-cup type. 4,195,751, Cl. 221-17.000.

Smith, Eugene L., Jr.: *See—*
Wang, Samuel S.; Lewellyn, Morris E.; and Smith, Eugene L., Jr., 4,196,092, Cl. 252-61.000.

Smith, Garth L.: *See—*
Tapply, Warren J.; and Smith, Garth L., 4,195,543, Cl. 83-794.000.

Smith, George E.: *See—*
Chiu, Herman S.; and Smith, George E., 4,196,220, Cl. 426-105.000.

Smith International, Inc.: *See—*
Kellner, Jackson M.; and Alther, George A., 4,195,701, Cl. 175-340.000.
Worden, Euclid P., 4,195,700, Cl. 175-340.000.

Smith, Jimmy B.: *See—*
Haley, Jack R.; Smith, Jimmy B.; and Mansfield, H. Vaughn, 4,196,051, Cl. 201-24.000.

Smith, Kenneth C.: *See—*
Garrett, Michael E.; and Smith, Kenneth C., 4,196,074, Cl. 210-3.000.

Smith, Lyle B., to General Motors Corporation. Liquid level control for a transmission sump. 4,195,652, Cl. 137-43.000.

Smith, Peter W., to Bell Telephone Laboratories, Incorporated. Interferometer apparatus using electro-optic material with feedback. 4,196,396, Cl. 330-4.300.

Smith, Robert M.: *See—*
McEowen, James R.; Smith, Robert M.; and Wang, Tse L., 4,196,316, Cl. 179-18.0ES.

Smith, Ronn G.: *See—*
Swigert, David L.; and Smith, Ronn G., 4,196,422, Cl. 340-542.000.

Smith, Truman; and Grayum, Clyde. Gutter and hanger arrangement. 4,195,452, Cl. 52-11.000.

Smiths Industries Limited: *See—*
Pitkin, John E., 4,196,390, Cl. 324-262.000.

Smoll, Owen C. In line electromagnetic flow measurement transducer. 4,195,515, Cl. 73-194.0EM.

Smoller, Stanley B.; and Frock, Gerald I., to Pennwalt Corporation. Method of hard surfacing a metal object. 4,196,336, Cl. 219-76.150.

Snedkerud, Ole: *See—*
Luchinger, Hanspeter; Snedkerud, Ole; and Wyss, Jurg, 4,196,392, Cl. 455-117.000.

Snyder, Kenneth J.: *See—*
Johnson, Howard D.; and Snyder, Kenneth J., 4,196,094, Cl. 252-103.000.

Societa Farmaceutici Italia S.p.A.: *See—*
Beacco, Enzo; Bernardi, Luigi; Di Salle, Enrico; Falconi, Giovanni; and Patelli, Bianca, 4,196,288, Cl. 544-125.000.

Societe Anonyme de Telecommunications: *See—*
Boutmy, Patrick E.; Stutzmann, Michel; and Walraet, Jean G., 4,196,315, Cl. 370-102.000.

Societe de Vente de l'Aluminium Pechiney: *See—*
Patrie, Jos; Lefebvre, Jacques; and Boddele, Dominique, 4,196,060, Cl. 204-28.000.

Societe d'Etudes de Machines Thermiques S.E.M.T.: *See—*
Bastenhof, Dirk, 4,195,610, Cl. 123-139.0AZ.

Societe d'Optique, Precision Electronique et Mecanique Sopelem: *See—*
Llop, Helenio; and Letort, Claude A., 4,195,412, Cl. 33-169.00R.

Societe Nationale Industrielle Aerospatiale: *See—*
Faure, Alain J.; Geoffroy, Alain Y.; and Signorelli, Louis, 4,195,803, Cl. 244-111.000.

Soecknick, Erhard; and von Hoesslin, Gerhard, to Messer Griesheim GmbH. Cooling tunnel for cooling a continuously running belt. 4,195,490, Cl. 62-374.000.

Sogo, Hiroshi; and Yoshino, Nobuo, to Fuji Jukogyo Kabushiki Kaisha. System for guiding flying vehicles with light beam. 4,195,799, Cl. 244-3.130.

Sohner, Gerhard: *See—*
Decker, Heinz; and Sohner, Gerhard, 4,195,603, Cl. 123-117.00R.

Solberg, John W.: *See—*
Specktor, Gerald A.; and Solberg, John W., 4,195,862, Cl. 280-661.000.

Solitron Devices, Inc.: *See—*
Adams, Guy E., 4,196,394, Cl. 455-289.000.

Sollich, Helmut, to Sollich KG Spezialmaschinenfabrik. Apparatus for treating materials containing cocoa butter. 4,195,935, Cl. 366-325.000.

Sollich KG Spezialmaschinenfabrik: *See—*
Sollich, Helmut, 4,195,935, Cl. 366-325.000.

Solomon, Daniel M.: *See—*
Gold, Elijah H.; and Solomon, Daniel M., 4,196,124, Cl. 260-239.00A.

Solvay & Cie.: *See—*
Michel, Edmond, 4,196,165, Cl. 264-530.000.

Sony Corporation: *See—*
Okada, Takashi; Kuniyoshi, Yasunobu; and Tominaga, Kiyonori, 4,196,445, Cl. 358-8.000.

Sowa, Kunihiro, to Nippon Soken, Inc. Dot-matrix type vehicle condition display apparatus. 4,196,413, Cl. 340-52.00F.

Spanier, Hermann, to Dr. Boy G.m.b.H. Plasticizing cylinder for a plastics moulding machine. 4,195,934, Cl. 366-76.000.

Spawr Optical Research, Inc.: *See—*
Dourte, Dixon D.; Pierce, Richard L.; and Spawr, Walter J., 4,195,913, Cl. 350-292.000.

Spawr, Walter J.: *See—*
Dourte, Dixon D.; Pierce, Richard L.; and Spawr, Walter J., 4,195,913, Cl. 350-292.000.

Speakman, Thomas S. Fuel consumption control system for cooking machines. 4,195,558, Cl. 99-325.000.

Specht, Steven J.: *See—*
Wood, Judson A.; and Specht, Steven J., 4,196,071, Cl. 204-266.000.

Specktor, Gerald A.; and Solberg, John W., to Shim-A-Line, Inc. Camber adjusting shim arrangement. 4,195,862, Cl. 280-661.000.

Speiser, Jeffrey M.: *See—*
Whitehouse, Harper J.; Means, Robert W.; Wrench, Edwin H., Jr.; Speiser, Jeffrey M.; and Weber, Allan G., 4,196,448, Cl. 358-135.000.

Spence, Gavin G., to Hercules Incorporated. Paper coated with binder and organic pigment particles. 4,196,253, Cl. 428-323.000.

Sperry, Charles R., to Sealed Air Corporation. Method and apparatus for forming foam cushions. 4,196,160, Cl. 264-40.400.

Sperry Corporation: *See—*
Kestigian, Michael; McClure, Robert E.; and Vaher, Eo, 4,195,908, Cl. 350-151.000.

Spetgang, Irwin; and Brennan, James J., to RCA Corporation. Magnetic tape rotary headwheel assembly with venting means. 4,196,457, Cl. 360-129.000.

Spetz, Harald K.: *See*—
Lindqvist, Bengt-Erik; and Spetz, Harald K., 4,196,235, Cl. 427-356.000.

Spieth, Ernst K.; Murso, Bernhard; and Riedmuller, Eberhard, to Spieth, Ernst K. Target changer for use on a shooting range. 4,195,840, Cl. 273-406.000.

Spivack, John D., to Ciba-Geigy Corporation. Alkylated 1,1'-biphenyl-2,2'-diyl phosphites and stabilized compositions. 4,196,117, Cl. 260-45.7PH.

Spivack, John D.; and Dexter, Martin, to Ciba-Geigy Corporation. 2,4,6-Trialkyl-3-hydroxybenzylmalonate. 4,196,301, Cl. 560-75.000.

Spock, Alexander: *See*—
Joines, William T.; Burton, Larry W.; Rafal, Marc D.; and Spock, Alexander, 4,195,641, Cl. 128-632.000.

Sprakel, Karl J.: *See*—
Korb, Josef; Sprakel, Karl J.; and Muller, Friedrich A., 4,195,450, Cl. 51-319.000.

Sprenkle, George J., to Burroughs Corporation. Wire wrapping bit for semiautomatic wiring machines. 4,195,400, Cl. 29-753.000.

Squire, Herbert D., to Magic Chef, Inc. Mounting socket. 4,195,888, Cl. 312-214.000.

Stager, Francis W., to Litton Industrial Products, Inc. Bidirectional valve for cryogenic fluids. 4,195,815, Cl. 251-306.000.

Stahl, Jurgen: *See*—
Schuster, Wilhelm; Wollmann, Klaus; and Stahl, Jurgen, 4,195,549, Cl. 87-1.000.

Standard Folding Cartons, Inc.: *See*—
Levkoff, Henry S.; and Falco, Alphonse, 4,195,963, Cl. 414-786.000.

Standing, Arthur F., to Communications Satellite Corporation. Low-power voltage and current diode driver. 4,196,381, Cl. 323-23.000.

Staudenmayer, William J.; Regan, Michael T.; Van Allan, James A.; and Yoerger, William E., to Eastman Kodak Company. Electrophotographic papers employing organic photoconductors. 4,195,990, Cl. 430-70.000.

Stauffer Chemical Company: *See*—
Benjamin, Robert E.; and Edging, Thomas E., 4,196,226, Cl. 426-551.000.

Steele, Everett T., Jr., to Robertshaw Controls Company. Condition responsive valve construction and method of making the same and system therefor. 4,195,663, Cl. 137-599.200.

Stein, Hermann, to Steuerungstechnik GmbH. Synchronization apparatus with variable window width and spacing at the receiver. 4,196,416, Cl. 340-147.00R.

Stein, Robert G.; and Kenney, Donald S., to Abbott Laboratories. Herbicides derived from dihalo isonicotinoyl derivatives of amino acids. 4,195,984, Cl. 71-94.000.

Steinbeck, Hermann: *See*—
Petzoldt, Karl; Steinbeck, Hermann; and Elger, Walter, 4,196,204, Cl. 424-243.000.

Steiner, Edward L., to Xerox Corporation. Reproduction machine with selectively disclosable programs. 4,196,476, Cl. 364-900.000.

Steiner, Peter; and Gutterman, Carl, to Foster Wheeler Energy Corporation. Nickel sulfide process for the removal of H_2S. 4,196,174, Cl. 423-230.000.

Steinmetz-Patent-Mullerei KG: *See*—
Falk, Otto, 4,196,224, Cl. 426-483.000.

Stemme, Otto; Kirchhof, Gunther; Lermann, Peter; Stenzenberger, Volkmar; and Theer, Anton, to AGFA-Gevaert, A.G. Camera with zoom lens. 4,195,924, Cl. 354-197.000.

Stenzenberger, Volkmar: *See*—
Stemme, Otto; Kirchhof, Gunther; Lermann, Peter; Stenzenberger, Volkmar; and Theer, Anton, 4,195,924, Cl. 354-197.000.

Stepanov, Vasily A.: *See*—
Vereschagin, Leonid F.; Yakovlev, Evgeny N.; Slesarev, Vladislav N.; Stepanov, Vasily A.; Preobrazhensky, Alexandr Y.; Varfolomeeva, Tatyana D.; and Shterenberg, Ljudmila E., 4,196,181, Cl. 423-446.000.

Sterling Drug Inc.: *See*—
Bell, Malcolm R.; and Oesterlin, Rudolf, 4,196,296, Cl. 546-272.000.
Jarcho, Michael; and Salsbury, Ronald L., 4,195,366, Cl. 3-1.900.

Sterling, Henley F.; and Irven, John, to International Standard Electric Corporation. Method of manufacturing a continuous optical preform. 4,195,980, Cl. 65-3.00A.

Stettner & Co.: *See*—
Seifert, Christian, 4,196,058, Cl. 204-15.000.

Steude, Heinrich: *See*—
Kranz, Eckart; Schubart, Rudiger; Schwarz, Herbert; Siegle, Peter; and Steude, Heinrich, 4,196,150, Cl. 260-593.00H.

Steuerungstechnik GmbH: *See*—
Stein, Hermann, 4,196,416, Cl. 340-147.00R.

Stevens, David K.: *See*—
DeGood, David A.; and Stevens, David K., 4,196,312, Cl. 198-781.000.

Stewart, Charles J.: *See*—
Craven, Jack L.; Marjoram, Ernest B.; Sandeffer, H. Dale; and Stewart, Charles J., 4,195,923, Cl. 354-91.000.

Steyr-Daimler-Puch Aktiengesellschaft: *See*—
Resele, Peter, 4,195,705, Cl. 180-205.000.

Stichter, Gunter, to SIPAVEL-Sociedade de Isolamentos Para Veiculos, Lda. Method for making gasket including spherical stop means and vulcanized in-situ. 4,196,162, Cl. 264-131.000.

Stiegler, Karl-Heinz: *See*—
Schulze, Ehrhart, 4,195,960, Cl. 414-49.000.

Stigter, Hendrik G.: *See*—
Hinze, Adrien G.; Stigter, Hendrik G.; and Slettenhaar-von Piekartz, Maria L. A., 4,196,108, Cl. 260-18.00N.

Stiner, Roy E., to Brunswick Corporation. Fishing reel with removable rotor. 4,195,793, Cl. 242-84.20R.

Stokkers, Henk, to Maryland Cup Corporation. Round containers with square tops and method and apparatus for producing same. 4,195,465, Cl. 53-443.000.

Stolzenburg, Rudolf; Marx, Paul; and Puschel, Walter, to Agfa-Gevaert Aktiengesellschaft. Photographic dye diffusion transfer process. 4,195,992, Cl. 430-242.000.

Strasser, Bernd: *See*—
Mose, Luciano; Schurig, Helmut; and Strasser, Bernd, 4,196,069, Cl. 204-257.000.

Strauss, Bernard D.: *See*—
George, David A.; Strauss, Bernard D.; and Weisman, Irving H., 4,195,525, Cl. 73-422.0TC.

Strohmeyer, Willi. Device for measuring the length of a web. 4,195,410, Cl. 33-134.00R.

Strycker, Stanley J., to Dow Chemical Company, The. Substituted phenoxyalkyl quaternary ammonium compounds. 4,196,143, Cl. 260-567.60M.

Stubbings, James H., to Potomac Applied Mechanics, Inc. Power shear yoke construction and ball-bearing assembly. 4,195,407, Cl. 30-228.000.

Stupay, Lawrence J., to Bunker Ramo Corporation. Flat ribbon cable mass termination connector assembly. 4,195,893, Cl. 339-14.00R.

Sturgeon, Lloyd F.; and Tice, George M., to SCM Corporation. Zoned heat treating apparatus. 4,195,418, Cl. 34-216.000.

Sturges, James R.: *See*—
Roley, Robert D.; and Sturges, James R., 4,195,852, Cl. 277-92.000.

Sturhahn, Hans, to Feldmuhle Aktiengesellschaft. False twisting apparatus. 4,195,470, Cl. 57-339.000.

Stutzmann, Michel: *See*—
Boutmy, Patrick E.; Stutzmann, Michel; and Walraet, Jean G., 4,196,315, Cl. 370-102.000.

Suganuma, Hisashi: *See*—
Okatani, Masanao; Onishi, Hiroshi; Ishibashi, Yoshiaki; Sato, Reisuke; Suganuma, Hisashi; Yokogawa, Tomohisa; Ueki, Yoshiharu; Kama, Haruo; Kosuga, Tadashi; and Ogawa, Tadashi, 4,196,395, Cl. 455-154.000.

Sugawara, Hiroyuki: *See*—
Kurosawa, Yukio; Kawakubo, Yukio; and Sugawara, Hiroyuki, 4,196,327, Cl. 200-144.00B.

Sumitani, Etuo: *See*—
Fujie, Hiroshi; Kai, Osamu; Masunaga, Eiji; Sumitani, Etuo; and Shimomai, Akiro, 4,196,118, Cl. 260-45.70P.

Sumitomo Durez Company, Ltd.: *See*—
Funabiki, Kyohei; Matsushima, Noriaki; and Inouye, Naomitsu, 4,196,114, Cl. 260-28.00P.

Sumitomo Metal Industries, Ltd.: *See*—
Ikeda, Masahiko; Nakanishi, Mutsuo; and Katsumoto, Norio, 4,196,335, Cl. 219-73.000.

Summerhays, Brent: *See*—
Anderson, Kenneth W.; Summerhays, Brent; and Cazier, Verl O., 4,195,522, Cl. 73-229.000.

Sunbeam Corporation: *See*—
DuBois, Jean-Pierre; and Lockett, William L., 4,195,560, Cl. 99-422.000.

Sundstrand Corporation: *See*—
Schmohe, James S., 4,195,718, Cl. 192-67.00R.

Sutera, Richard, to Mead Corporation, The. Sheet loading device. 4,195,831, Cl. 271-302.0AS.

Suttles, James M., to Hopeman Brothers, Inc. Display with movable indicia. 4,195,430, Cl. 40-518.000.

Suyama, Shuji; and Shimizu, Mamoru, to Nippon Oil and Fats Co., Ltd. Process for producing β,γ-unsaturatedaldehyde. 4,196,151, Cl. 260-601.00R.

Suzuki, Takeshi; Furukawa, Yasuyoshi; Tomoda, Masayasu; and Ueta, Yutaka, to Daikin Kogyo Co., Ltd. Elastomeric composition. 4,196,255, Cl. 428-421.000.

Svendsen, Jean M. Facial exercise aid for the face, neck and jaw. 4,195,833, Cl. 272-95.000.

Swanson, Ralph S.: *See*—
Goldstein, Ralph; and Swanson, Ralph S., 4,195,497, Cl. 66-185.000.

Swanson, Roger I. Means for anchoring to rock. 4,195,952, Cl. 405-259.000.

Swart, Louis M.: *See*—
Geus, Jacob H.; and Swart, Louis M., 4,196,369, Cl. 313-365.000.

Sweet, John R., III. Spool holder. 4,195,739, Cl. 211-113.000.

Swiecicki, Tomasz S.: *See*—
King, Frederick D.; and Swiecicki, Tomasz S., 4,195,468, Cl. 57-9.000.

Swigert, David L.; and Smith, Ronn G., to Teledyne Industries, Inc. Intrusion alarm system. 4,196,422, Cl. 340-542.000.

Swisher, George W., Jr., to CMI Corporation. Method for resurfacing a paved roadway. 4,195,946, Cl. 404-75.000.

Swiss Aluminium Ltd.: *See*—
Friedli, Hans, 4,196,067, Cl. 204-243.00M.
Pryor, Michael J.; Popplewell, James M.; and Anthony, William H., 4,196,262, Cl. 428-654.000.

Swoboda, Josef: *See*—
Haar, Gerhard; and Swoboda, Josef, 4,196,415, Cl. 340-75.000.

Sybron Corporation: *See*—
Reser, G. Louis, 4,195,829, Cl. 269-325.000.

Schreckendgust, Jay G., 4,196,460, Cl. 362-231.000.
Sycor, Inc.: *See—*
Velazquez, Juan F., 4,195,938, Cl. 400-124.000.
Sylwan, Odd B.: *See—*
Hagbjer, Gunnar I.; and Sylwan, Odd B., 4,195,713, Cl. 188-1.00B.
Syvakari, Pertti, to ASEA AB. Press for hydrostatic extrusion of tubes. 4,195,505, Cl. 72-60.000.
Szporny, Laszlo: *See—*
Molnar, Arpad; Felfoldi, Karoly; Bartok, Mihaly; Karpati, Egon; and Szporny, Laszlo, 4,196,206, Cl. 424-250.000.
Szurman, Erich; Worberg, Rainer; and Eisenhut, Werner, to Bergwerksverband GmbH. Heating wall construction, particularly for use in coking ovens. 4,196,052, Cl. 202-138.000.
Tachiki, Hideo: *See—*
Ueda, Takeo; Fujita, Shinichi; Tachiki, Hideo; and Asano, Shuichi, 4,195,392, Cl. 24-230.00A.
Tacki-Mac Grips, Inc.: *See—*
Poulin, Raymond J., 4,195,837, Cl. 273-81.00R.
Tadanier, John S.; and Martin, Jerry R., to Abbott Laboratories. 2'N-Acyl and alkyl-6'-N-alkyl- and 6',6'-di-N-alkyl derivatives of fortimicins A and B. 4,196,197, Cl. 424-180.000.
Tae-Weon, Mo: *See—*
Shirai, Hiroshi, 4,196,378, Cl. 318-438.000.
Taft, Morris E., to Caterpillar Tractor Co. Piston fluid seal mounting. 4,195,849, Cl. 277-12.000.
Taipale, Dale L.; and Wlezien, Richard A., to Outboard Marine Corporation. Reed valve. 4,195,660, Cl. 137-512.100.
Taiyo Seisakusho Manufacturing Co., Ltd.: *See—*
Iwase, Shigeo, 4,195,387, Cl. 17-58.000.
Takahashi, Hisao; Nomura, Takeshi; Ohara, Yoshitomo; Nakanishi, Hajime; Miwa, Naotaka; Kawabe, Naoshi; Endo, Tomizo; Hozuma, Hiroshi; and Akimoto, Minoru, to Kureha Kagaku Kogyo Kabushiki Kaisha; and Chiyoda Chemical Engineering & Construction Co., Ltd. Decoking apparatus. 4,196,050, Cl. 196-122.000.
Takahashi, Tadashi; and Morinaga, Shigeki, to Hitachi, Ltd. Protection apparatus for electric sewing machine. 4,195,585, Cl. 112-277.000.
Takahashi, Yasuhide, to Mitsubishi Denki Kabushiki Kaisha. Fault detection device. 4,195,528, Cl. 73-579.000.
Takanohashi, Hiromitsu: *See—*
Taniyama, Susumu; Takanohashi, Hiromitsu; and Inoue, Shoichi, 4,196,014, Cl. 106-287.130.
Takayama, Hidetaka; and Ikeda, Hideo, to Nippon Kogaku K.K. Anti-reflection film for synthetic resin base. 4,196,246, Cl. 428-213.000.
Takeuchi, Hiroo, to Nissin Kogyo Kabushikia Kaisha. Vacuum type servometer for vehicle use. 4,195,661, Cl. 137-515.500.
Takita, Hitoshi: *See—*
Enomoto, Satoru; Wada, Hisayuki; Nishita, Sadao; Mukaida, Yutaka; Yanaka, Mikiro; and Takita, Hitoshi, 4,196,135, Cl. 260-429.00R.
Tama, Tomoo; Inaba, Masao; and Kashigi, Kazuo, to Nippon Electric Co., Ltd. Digital video effects system employing a chroma-key tracking technique. 4,196,449, Cl. 358-183.000.
Tanaka, Haruo: *See—*
Omura, Satoshi; Tanaka, Haruo; Awaya, Juichi; and Hata, Toju, 4,196,266, Cl. 435-125.000.
Tanaka, Masaki: *See—*
Imai, Kiyoshi; and Tanaka, Masaki, 4,196,273, Cl. 528-15.000.
Tanaka, Yoko: *See—*
DeLuca, Hector F.; Ikekawa, Nobuo; Tanaka, Yoko; and Kobayashi, Yoshiro, 4,196,133, Cl. 260-397.200.
Taniyama, Susumu; Takanohashi, Hiromitsu; and Inoue, Shoichi, to Mitsubishi Gas Chemical Company, Inc. Surface-treating paint for shaped plastic articles. 4,196,014, Cl. 106-287.130.
Taplin, Lael B., to Bendix Corporation, The. Control of EGR in a closed loop EFI engine. 4,195,604, Cl. 123-119.00A.
Tapply, Warren J.; and Smith, Garth L., to Wallace Murray Canada Limited. Band saw. 4,195,543, Cl. 83-794.000.
Tarantola, Luciano, to Industrie Pirelli S.p.A. Method and device for producing metallic cords. 4,195,469, Cl. 57-311.000.
Tasman, Herman A.; and Patzold, Ernst E. S., to European Atomic Energy Community (Euratom). Ultrasonic thermometer. 4,195,523, Cl. 73-339.00A.
Tatsuta, Kuniaki: *See—*
Umezawa, Sumio; Umezawa, Hamao; and Tatsuta, Kuniaki, 4,196,280, Cl. 536-17.00R.
Taziker, Robert E. Space heating panels. 4,195,687, Cl. 165-129.000.
TDK Electronics Company, Limited: *See—*
Okamura, Masatoshi; and Shiba, Haruo, 4,195,797, Cl. 242-199.000.
Teass, Horace A., Jr. Coaxial differential PH system. 4,196,383, Cl. 324-438.000.
Technal International S.A.: *See—*
Bos, Andre, 4,195,760, Cl. 225-103.000.
Technicon Instruments Corporation: *See—*
Kumar, Anand, 4,196,056, Cl. 204-1.00T.
Techno Corporation: *See—*
Pysh, William A., 4,195,657, Cl. 137-460.000.
Tecnomare, S.P.A.: *See—*
Banzoli, Valeriano; Di Tella, Vincenzo; and Vielmo, Paolo, 4,195,426, Cl. 37-60.000.
Teijin Limited: *See—*
Azuma, Shizuo; Saiki, Noritsugu; and Kawase, Shoji, 4,196,279, Cl. 528-275.000.
Fujie, Hiroshi; Kai, Osamu; Masunaga, Eiji; Sumitani, Etuo; and Shimomai, Akiro, 4,196,118, Cl. 260-45.70P.
Inata, Hiroo; Ogasawara, Makoto; Morinaga, Tsuto; and Norike, Akihiro, 4,196,066, Cl. 204-159.150.
Tektronix, Inc.: *See—*
McGrath, Patrick J., Jr., 4,196,371, Cl. 313-456.000.
Wimmer, Guenther W.; and Bingham, Douglas B., 4,196,345, Cl. 235-435.000.
Teledyne Industries, Inc.: *See—*
Swigert, David L.; and Smith, Ronn G., 4,196,422, Cl. 340-542.000.
Teledyne Mid-America Corporation: *See—*
Novick, Sheldon; and Wenrich, Carl M., 4,195,582, Cl. 112-121.110.
Telefonaktiebolaget L M Ericsson: *See—*
Berg, Erik L., 4,196,470, Cl. 364-200.000.
Temme, Karl: *See—*
Walther, Carl K.; Walther, Henning D.; Hageluken, Hubert P.; and Temme, Karl, 4,195,447, Cl. 51-163.200.
Temple, Rodger G.: *See—*
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Termcom, Inc.: *See—*
Baran, Paul, 4,195,937, Cl. 400-120.000.
Tetra Pak Development S.A.: *See—*
Reil, Wilhelm, 4,196,035, Cl. 156-361.000.
Texaco Inc.: *See—*
Schlicht, Raymond C., 4,196,091, Cl. 252-51.50A.
Texas Instruments Deutschland GmbH: *See—*
Butner, Karl; Hehnen, Josef; and Rudiger, Reiner, 4,196,444, Cl. 357-81.000.
Thackaberry, S. Paul: *See—*
Murphy, Clarence R.; Thackaberry, S. Paul; Boehme, Robert E., deceased; and Boehme, Helen J., legal representative, 4,196,305, Cl. 568-758.000.
Theer, Anton: *See—*
Stemme, Otto; Kirchhof, Gunther; Lermann, Peter; Stenzenberger, Volkmar; and Theer, Anton, 4,195,924, Cl. 354-197.000.
Thexton Manufacturing Company: *See—*
Norcross, Paul, 4,195,812, Cl. 251-148.000.
Thiele, Geraldine H., to Oxford Hill, Ltd. Injectable solutions and processes of using such. 4,196,218, Cl. 424-318.000.
Thiele, Willi: *See—*
Wochnowski, Waldemar; and Thiele, Willi, 4,195,647, Cl. 131-140.00P.
Thiis-Evensen, Eyvind M., to Isola Fabrikker A/S. Roofing shingle. 4,195,461, Cl. 52-557.000.
Thomas, George: *See—*
Sachs, Peter R.; and Thomas, George, 4,196,243, Cl. 428-147.000.
Thomas, Herbert: *See—*
Seubert, Jurgen; Thomas, Herbert; and Andrews, Peter, 4,196,291, Cl. 544-344.000.
Thomas, Robert G. Semiconductor device subassembly and manufacture thereof. 4,196,309, Cl. 174-94.00R.
Thomason, Raymond. Rolled material marking arrangement. 4,195,787, Cl. 242-1.000.
Thome, Paul. Method for assembling vertical ducts by electron-welding. 4,196,334, Cl. 219-61.000.
Thompson, Richard L.; Hubbert, Murray J.; and Wade, Vernon J., to Bettis Corporation. Valve actuator. 4,195,816, Cl. 251-229.000.
Thorn Domestic Applicances (Electrical) Limited: *See—*
Livings, Rodney; and Bosiacki, Richard J., 4,195,415, Cl. 34-48.000.
Thorsen, Niels P.: *See—*
Vogler, Jes; Hanson, Peter R.; and Thorsen, Niels P., 4,196,326, Cl. 200-81.00R.
Tice, George M.: *See—*
Sturgeon, Lloyd F.; and Tice, George M., 4,195,418, Cl. 34-216.000.
Tiholiz, Ivan C. Divalen/monovalent bipolar cation therapy for enhancement of tissue perfusion and reperfusion in disease states. 4,196,196, Cl. 424-178.000.
Timperio, Henry. Glare shield assembly. 4,195,876, Cl. 296-97.00G.
Timte, Frank W.: *See—*
Corrado, Anthony P.; Marchese, Vincent P.; Morici, Frank S.; and Timte, Frank W., 4,195,811, Cl. 251-30.000.
Tinga, Wayne R.: *See—*
MacKay B, Alejandro; Tinga, Wayne R.; and Voss, Walter A. G., 4,196,332, Cl. 219-10.55B.
Titeflex Corporation: *See—*
Lalikos, James M.; Waite, Harold K.; and Lefebvre, Kenneth E., 4,196,031, Cl. 156-143.000.
Toagosei Chemical Industry Co., Ltd.: *See—*
Yamada, Akira; and Kimura, Kaoru, 4,196,271, Cl. 525-242.000.
Tobita, Hideyuki; and Nozaki, Koichi, to Hitachi, Ltd. Automatic washing machine. 4,195,500, Cl. 68-12.00R.
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Tohma, Teruo; Yoshino, Toshikazu; and Tsukagoshi, Tsunehiro, to Pioneer Electronic Corporation. Surface hardening method. 4,196,022, Cl. 148-6.000.
Toho Beslon Co., Ltd.: *See—*
Noguchi, Katsuichi; Maeda, Kazuo; Anzai, Yuriko; Hirai, Minoru; Izumi, Kazuo; and Niijima, Kenji, 4,195,649, Cl. 131-261.00R.

Tokyo Kagaku Kikai Kabushiki Kaisha: *See*—
Kawase, Suminosuke; Uchiumi, Yoshihisa; and Nishimura, Shinichi, 4,195,903, Cl. 350-36.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Watabe, Isao; and Mizuno, Hideki, 4,196,387, Cl. 324-107.000.
Watanabe, Masayuki; Komeya, Katsutoshi; and Nakajima, Masahiro, 4,196,171, Cl. 422-246.000.

Tokyo Shibaura Electric Co., Ltd.: *See*—
Denko, Masatoshi, 4,196,430, Cl. 340-726.000.

Tominaga, Kiyonori: *See*—
Okada, Takashi; Kuniyoshi, Yasunobu; and Tominaga, Kiyonori, 4,196,445, Cl. 358-8.000.

Tomoda, Masayasu: *See*—
Suzuki, Takeshi; Furukawa, Yasuyoshi; Tomoda, Masayasu; and Ueta, Yutaka, 4,196,255, Cl. 428-421.000.

Tomy Kogyo Co., Inc.: *See*—
Iwao, Noriaki, 4,195,423, Cl. 35-30.000.
Yumoto, Yoshihide, 4,195,742, Cl. 213-75.0TC.

Toth, James M.: *See*—
Ross, Benjamin J.; Toth, James M.; Abramczyk, Richard F.; and Coy, Gerald R., 4,195,530, Cl. 73-638.000.

Touillet, Marielle: *See*—
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Toussaint, Herbert: *See*—
Decker, Martin; Hoffmann, Herwig; Hupfer, Leopold; and Toussaint, Herbert, 4,196,147, Cl. 260-577.000.

Townsend, Todd V., to Lynch Communication Systems, Inc. Method and means for powering telephone span lines. 4,196,320, Cl. 179-170.00J.

Townsend, Todd V.: *See*—
Decoursey, Calvin H.; and Townsend, Todd V., 4,196,421, Cl. 340-347.0AD.

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Funatsu, Chuhei; and Hirata, Toshikiyo, 4,196,434, Cl. 343-6.50R.

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Nagasaka, Yasumasa; Furukawa, Haruki; Maeda, Takao; and Tsukatani, Masatsugu, 4,195,607, Cl. 123-119.00B.
Sanada, Masakatsu; Ito, Toshimitsu; and Nakada, Masahiko, 4,195,608, Cl. 123-136.000.

Traub, Norman L.: *See*—
Johnston, Richard W.; Neuman, John G.; Schroeder, Thaddeus; and Traub, Norman L., 4,195,673, Cl. 141-349.000.

Traynor, Sean G.: *See*—
Kane, Bernard J.; and Traynor, Sean G., 4,196,303, Cl. 560-126.000.

Trenkle, Robert W.; Mookherjee, Braja D.; Kasper, Robin; Vock, Manfred H.; Vinals, Joaquin; Kiwala, Jacob; and Schmitt, Frederick L., to International Flavors & Fragrances Inc. 1-Acyl-2,6,6-trimethylcyclohexene derivatives, processes for producing same, intermediates therefor and organoleptic uses thereof. 4,196,306, Cl. 568-824.000.

Troedsson, Per Y.; and Hesselberg, Rune E., to U.S. Philips Corporation. Acceleration activated battery. 4,196,264, Cl. 429-114.000.

Troup, Edward M., to Rain Bird Sprinkler Mfg. Corp. Method and device for enhancing the distribution of water from a sprinkler operated at low pressures. 4,195,782, Cl. 239-230.000.

TRW Inc.: *See*—
Blazek, William S., 4,195,396, Cl. 29-156.80H.
Blazek, William S., 4,195,683, Cl. 164-10.000.
Jones, Robert J.; and O'Rell, Michael K., 4,196,277, Cl. 528-208.000.

Tsuchida, Yutaka, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha. Apparatus for multi-strand continuous casting. 4,195,684, Cl. 164-416.000.

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Tsukatani, Masatsugu: *See*—
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Tucker, James E.; and Meyer, Burton C., to Marvin Glass & Associates. Shape matching device. 4,195,421, Cl. 35-22.00A.

Tundo, Frank; and Schneidewind, Edward A., to General Motors Corporation. Lock for removable roof closure latch mechanism. 4,195,866, Cl. 292-127.000.

Tune, John B.: *See*—
Clarke, David E.; Davies, James F.; Tune, John B.; and Wilde, Raymond J., 4,196,093, Cl. 252-99.000.

Tung, Lu H.; and Lo, Grace Y-S, to Dow Chemical Company, The. Polyfunctional lithium containing initiator. 4,196,153, Cl. 260-665.00R.

Tung, Lu H.; Lo, Grace Y-S.; and Beyer, Douglas E., to Dow Chemical Company, The. Soluble multifunctional lithium containing initiator. 4,196,154, Cl. 260-665.00R.

Tuomy, Justin M.: *See*—
Shaw, Carol P.; Secrist, John L.; and Tuomy, Justin M., 4,196,219, Cl. 426-89.000.

Turetsky, Isadore. Filter-purifier cartridge. 4,196,086, Cl. 210-232.000.

Tutwiler, Gene: *See*—
Mohrbacher, Richard J.; Ho, Winston; and Tutwiler, Gene, 4,196,300, Cl. 549-90.000.

Ube Industries, Ltd.: *See*—
Iwai, Tadashi; Kawahito, Takashi; and Yamada, Tetsuo, 4,196,178, Cl. 423-290.000.
Matsuura, Tetsuro; Yamamoto, Shinji; Oda, Denichi; and Matsumori, Yasuo, 4,196,106, Cl. 260-5.000.

Uchiumi, Yoshihisa: *See*—
Kawase, Suminosuke; Uchiumi, Yoshihisa; and Nishimura, Shinichi, 4,195,903, Cl. 350-36.000.

Ueda, Takeo; Fujita, Shinichi; Tachiki, Hideo; and Asano, Shuichi, to NSK-Warner K.K. Seat belt buckle device. 4,195,392, Cl. 24-230.00A.

Ueki, Yoshiharu: *See*—
Okatani, Masanao; Onishi, Hiroshi; Ishibashi, Yoshiaki; Sato, Reisuke; Suganuma, Hisashi; Yokogawa, Tomohisa; Ueki, Yoshiharu; Kama, Haruo; Kosuga, Tadashi; and Ogawa, Tadashi, 4,196,395, Cl. 455-154.000.

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Shapiro, Semen V.; Gutin, Leonid I.; Kiyamov, Rinat N.; Okhotnikov, Viktor A.; Roginskaya, Ljubov E.; Kazantsev, Vladimir G.; and Novichkov, Vladimir E., 4,196,468, Cl. 363-75.000.

Uhl, Karl: *See*—
Manzke, Klaus; Hammerschmitt, Peter; and Uhl, Karl, 4,196,456, Cl. 360-106.000.

Ullmann, Roland; Schweingruber, Otto; and Oprach, Klaus, to Braun Aktiengesellschaft. Container for storing objects. 4,195,650, Cl. 132-83.00R.

Ultra Centrifuge Nederland N.V.: *See*—
van Haren, Johannes G.; and Buisman, Karel L., 4,195,855, Cl. 277-166.000.

Ulveling, Leon; and Metz, Jean, to Paul Wurth S.A. Compact apparatus for drilling and plugging tap holes. 4,195,825, Cl. 266-271.000.

Umezawa, Hamao: *See*—
Umezawa, Sumio; Umezawa, Hamao; and Tatsuta, Kuniaki, 4,196,280, Cl. 536-17.00R.

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Chiu, Herman S.; and Smith, George E., 4,196,220, Cl. 426-105.000.
Lustig, Stanley; Vicik, Stephen J.; and Kohler, William J., 4,196,240, Cl. 428-35.000.

United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See*—
Coates, David; Gray, George W.; and McDonnell, Damien G., 4,195,916, Cl. 350-346.000.

United States of America
Agriculture: *See*—
Dixon, Robert M., 4,195,695, Cl. 172-1.000.
Frank, Arlen W.; Daigle, Donald J.; and Kullman, Russell M. H., 4,196,149, Cl. 260-583.00E.
Frank, Arlen W., 4,196,302, Cl. 560-24.000.
Replogle, John A.; Clemmens, Albert J.; and Bell, Edward D., 4,195,519, Cl. 73-215.000.
Air Force: *See*—
Phillips, Calvert F., Jr., 4,196,435, Cl. 343-17.2PC.
Army: *See*—
Beeker, Charles W.; and Pribyl, William J., Jr., 4,195,571, Cl. 102-89.0CD.
Cason, Charles M., III; and Dezenberg, George J., 4,196,399, Cl. 331-94.50G.
George, David A.; Strauss, Bernard D.; and Weisman, Irving H., 4,195,525, Cl. 73-422.0TC.
Hara, Elmer H., 4,195,931, Cl. 356-346.000.
Roberts, Roy D.; and Lavering, Gordon R., 4,195,745, Cl. 220-2.200.
Shaw, Carol P.; Secrist, John L.; and Tuomy, Justin M., 4,196,219, Cl. 426-89.000.
Energy: *See*—
Bullock, Jack C.; and Kelly, Benjamin E., 4,195,664, Cl. 137-613.000.
Carver, Donald W.; and Whittaker, Jerry W., 4,196,423, Cl. 340-566.000.
Cho, Nakwon, 4,195,813, Cl. 251-203.000.
Fasching, George E.; and Keech, Thomas W., Jr., 4,196,417, Cl. 340-151.000.
Galloway, Terry R., 4,196,176, Cl. 423-248.000.
Li, Charles T., 4,196,183, Cl. 423-573.00G.
North, George G.; and Vogilin, George E., 4,196,359, Cl. 307-268.000.
Singleton, Russell M., 4,196,353, Cl. 250-456.000.
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Saravis, Calvin A., 4,196,085, Cl. 210-232.000.
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Goetz, Carl; and Ingle, William M. Quartz ball valve. 4,195,666, Cl. 137-625.400.
National Aeronautics and Space Administration: *See*—
Reid, Harry, Jr., 4,195,512, Cl. 73-12.000.
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Avidor, Joel M.; and Knight, Charles J., 4,196,401, Cl. 331-94.50G.
Brown, Charles B., 4,196,433, Cl. 343-6.00R.
Chea, Francisco, 4,196,473, Cl. 364-449.000.
Costantino, G.; and Carroll, D., 4,195,798, Cl. 244-1.0TD.
Laskowski, Gordon J.; and Schrick, Richard I., 4,195,962, Cl. 414-659.000.
Lennox, Thomas J., Jr., 4,196,055, Cl. 204-1.00T.

MacNeille, Stephen M., 4,195,574, Cl. 102-213.000.
Skaalen, Clifford I.; and Kling, Philip M., 4,195,872, Cl. 294-82.00R.
Whitehouse, Harper J.; Means, Robert W.; Wrench, Edwin H., Jr.; Speiser, Jeffrey M.; and Weber, Allan G., 4,196,448, Cl. 358-135.000.

U.S. Philips Corporation: *See—*
Diemer, Willem H.; and Zwep, Gerrit, 4,196,367, Cl. 313-59.000.
Geus, Jacob H.; and Swart, Louis M., 4,196,369, Cl. 313-365.000.
Huisman, Hendrikus F.; and Cats, Willem J., 4,196,258, Cl. 428-447.000.
Troedsson, Per Y.; and Hesselberg, Rune E., 4,196,264, Cl. 429-114.000.
Van Dijk, Jan; Claassen, Volkert; and Zwagemakers, Johannes M. A., 4,196,216, Cl. 424-309.000.

United States Steel Corporation: *See—*
Grochowski, Walter Z., 4,195,822, Cl. 266-165.000.
Ives, Kenneth D.; McCartney, Raymond F.; and Shoemaker, Alan K., 4,195,669, Cl. 138-178.000.
Rogers, Charles D.; and Fowler, Joseph A., 4,195,699, Cl. 175-27.000.

United Technologies Corporation: *See—*
Warner, John L., 4,195,774, Cl. 236-13.000.

University of California, Regents of the: *See—*
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University of Toledo: *See—*
Raftopoulos, Demetrios D.; and Kartalopoulos, Stamatios V., 4,195,929, Cl. 356-32.000.

Upjohn Company, The: *See—*
Bader, Fredric G.; and Burke, Howard J., 4,196,132, Cl. 260-396.00R.
Johnson, Roy A., 4,196,283, Cl. 542-426.000.
Youngdale, Gilbert A., 4,196,213, Cl. 424-275.000.

Urbank, Stanley. Chord selector. 4,195,546, Cl. 84-318.000.

Usui, Keizaburo; and Hayama, Isao, to Nissan Motor Company, Limited. Counter shaft automatic power transmission. 4,195,720, Cl. 192-0.092.

Vaher, Eo: *See—*
Kestigian, Michael; McClure, Robert E.; and Vaher, Eo, 4,195,908, Cl. 350-151.000.

Vahlensieck, Hans-Joachim: *See—*
Seiler, Claus-Dietrich; and Vahlensieck, Hans-Joachim, 4,196,139, Cl. 556-479.000.

Vahlkamp, Vernon F.; and Diekemper, Wayne. Bale unroller. 4,195,958, Cl. 414-24.600.

Vallejos, Jean Claude; and Christidis, Yani, to Hoechst France. Process for manufacturing thienyl-2 acetic acid. 4,196,299, Cl. 549-79.000.

Van Allan, James A.: *See—*
Staudenmayer, William J.; Regan, Michael T.; Van Allan, James A.; and Yoerger, William E., 4,195,990, Cl. 430-70.000.

van Anholt, Willem C.; and De Geus, Antonie, to Akzona Incorporated. Intertwined carpet yarn of varying dye affinity and carpets made from said yarn. 4,196,241, Cl. 428-92.000.

VanBaelen, Armand R.: *See—*
Bacehowski, David V.; and VanBaelen, Armand R., 4,196,088, Cl. 210-435.000.

Vancil, Karl L. Hydraulic boat lift with regulating system therefor. 4,195,948, Cl. 405-3.000.

Van Dijk, Jan; Claassen, Volkert; and Zwagemakers, Johannes M. A., to U.S. Philips Corporation. Novel benzylidene amini-oxyalkyl carboxylic acids and carboxylic acid derivatives. 4,196,216, Cl. 424-309.000.

van Haren, Johannes G.; and Buisman, Karel L., to Ultra Centrifuge Nederland N.V. Seal for sealing flanges and other objects. 4,195,855, Cl. 277-166.000.

Van Rens, Russell J.: *See—*
Anderson, Larry L.; Shumaker, Lawrence W.; and Van Rens, Russell J., 4,195,722, Cl. 192-131.00R.

Vardell, William G.: *See—*
Ball, Frank J.; Powers, John R.; and Vardell, William G., 4,196,134, Cl. 260-404.800.

Varfolomeeva, Tatyana D.: *See—*
Vereschagin, Leonid F.; Yakovlev, Evgeny N.; Slesarev, Vladislav N.; Stepanov, Vasily A.; Preobrazhensky, Alexandr Y.; Varfolomeeva, Tatyana D.; and Shterenberg, Ljudmila E., 4,196,181, Cl. 423-446.000.

Varga, Julianna K.: *See—*
Franks, Neal E.; and Varga, Julianna K., 4,196,282, Cl. 536-56.000.

Vasquez, Christine M.; and Rawlins, Linda L. Adjustable length circular knitting needle. 4,195,496, Cl. 66-117.000.

Vaughn, Eric: *See—*
Scopetti, Frank A.; Vaughn, Eric; and Manno, Joseph T., 4,195,617, Cl. 126-5.000.

Vecchiarelli, Nicholas: *See—*
Riley, Timothy J.; Vecchiarelli, Nicholas; and Fritz, Richard A., 4,195,892, Cl. 316-20.000.

Velazquez, Juan F., to Sycor, Inc. Lateral position control means for data printer heads. 4,195,938, Cl. 400-124.000.

Venne, Phillip L. Portable entranceway carpet for a recreational vehicle. 4,195,875, Cl. 296-1.00F.

Ventola, Ronald W.: *See—*
Gilson, Richard D.; and Ventola, Ronald W., 4,195,802, Cl. 244-17.130.

Verdouw, Albert J., to General Motors Corporation. Ring connection for porous combustor wall panels. 4,195,475, Cl. 60-754.000.

Vereschagin, Leonid F.; Yakovlev, Evgeny N.; Slesarev, Vladislav N.; Stepanov, Vasily A.; Preobrazhensky, Alexandr Y.; Varfolomeeva, Tatyana D.; and Shterenberg, Ljudmila E. Microcrystalline monolithic carbon material. 4,196,181, Cl. 423-446.000.

Verhoeven, Marc L. R. M. Parking meter. 4,195,471, Cl. 368-90.000.

Verhoff, Donald H.: *See—*
Larson, Thomas A.; Verhoff, Donald H.; and Blank, Wallace J., 4,195,856, Cl. 280-81.00R.

Vestergaard, Peter; Moller, Gunther; and Madsen, Rud F., to Aktieselskabet de Danske Sukkerfabrikken. Method and apparatus for measuring the concentration of fluids. 4,196,385, Cl. 324-58.50B.

Vicik, Stephen J.: *See—*
Lustig, Stanley; Vicik, Stephen J.; and Kohler, William J., 4,196,240, Cl. 428-35.000.

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Banzoli, Valeriano; Di Tella, Vincenzo; and Vielmo, Paolo, 4,195,426, Cl. 37-60.000.

Vigar, James M.: *See—*
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Vignos, James H.: *See—*
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Vinals, Joaquin: *See—*
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Vincent, Gary A., to Dow Corning Corporation. Furfuryloxy-substituted organosilicon compounds. 4,196,131, Cl. 260-347.800.

Vock, Manfred H.: *See—*
Trenkle, Robert W.; Mookherjee, Braja D.; Kasper, Robin; Vock, Manfred H.; Vinals, Joaquin; Kiwala, Jacob; and Schmitt, Frederick L., 4,196,306, Cl. 568-824.000.

Vogilin, George E.: *See—*
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Vogler, Jes; Hanson, Peter R.; and Thorsen, Niels P., to Danfoss A/S. Pressure responsive electric switch, particularly an evaporator thermostat for refrigerators. 4,196,326, Cl. 200-81.00R.

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Hofbauer, Peter; and Schwarz, Cornelia, 4,195,597, Cl. 123-30.00C.
Janssen, Lutz; Deutenbach, Klaus-Rainer; Luckoff, Hans-Jochen; and Warnecke, Karl, 4,195,874, Cl. 296-1.00S.

von Hoesslin, Gerhard: *See—*
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Vortec Corporation: *See—*
Inglis, Leslie R., 4,195,780, Cl. 239-73.000.

Vos, Hendrik J.: *See—*
deJong, Geert J.; and Vos, Hendrik J., 4,196,173, Cl. 423-210.000.

Voss, Gunter M.; and Schneider, Herbert, to Gunter M. Voss. Sheet cleat having movable gripping jaws. 4,195,587, Cl. 114-218.000.

Voss, Walter A. G.: *See—*
MacKay B, Alejandro; Tinga, Wayne R.; and Voss, Walter A. G., 4,196,332, Cl. 219-10.55B.

W. Schlafhorst & Co.: *See—*
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Wada, Hisayuki: *See—*
Enomoto, Satoru; Wada, Hisayuki; Nishita, Sadao; Mukaida, Yutaka; Yanaka, Mikiro; and Takita, Hitoshi, 4,196,135, Cl. 260-429.00R.

Wade, Vernon J.: *See—*
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Wagner Electric Corporation: *See—*
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Wagner, George G.; and Jordan, Thomas W., to Wescom, Inc. Program plug. 4,195,896, Cl. 339-18.00B.

Wagner, Helmar R.: *See—*
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Wagner, Karl: *See—*
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Wagner, Sigurd: *See—*
Shay, Joseph L.; and Wagner, Sigurd, 4,196,263, Cl. 429-111.000.

Waiblinger, Paul, to Index-Werke KG Hagn & Tessky. Apparatus for loading and unloading a work spindle of a machine tool. 4,195,961, Cl. 414-120.000.

Waite, Harold K.: *See—*
Lalikos, James M.; Waite, Harold K.; and Lefebvre, Kenneth E., 4,196,031, Cl. 156-143.000.

Wakabayashi, Motoyoshi: *See—*
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Waldhorst, Paul: *See—*
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Walker, Alfred. Apparatus for removal of silage from a silo. 4,195,786, Cl. 241-101.700.

Walker, Brian; Hunter, George S.; and Hunter, Susanne P., to Process Scientific Innovations Ltd. Method of making filter elements for gas or liquid. 4,196,027, Cl. 156-62.200.

Walker, Brooks. Wheeled briefcase. 4,195,676, Cl. 150-1.600.

Walker, Franklin E.; and Wasley, Richard J. Donor free radical explosive composition. 4,196,026, Cl. 149-46.000.

Wallace, John F. Autogyros. 4,195,800, Cl. 244-8.000.

Wallace Murray Canada Limited: *See*—
Tapply, Warren J.; and Smith, Garth L., 4,195,543, Cl. 83-794.000.

Wallis, Robert C.: *See*—
Wallis, Thomas F., Jr.; Pearson, Asa M.; and Wallis, Robert C., 4,195,606, Cl. 123-119.00E.

Wallis, Thomas F., Jr.; Pearson, Asa M.; and Wallis, Robert C. Method and apparatus for treating air for internal combustion engines. 4,195,606, Cl. 123-119.00E.

Walraet, Jean G.: *See*—
Boutmy, Patrick E.; Stutzmann, Michel; and Walraet, Jean G., 4,196,315, Cl. 370-102.000.

Walther, Carl K.; Walther, Henning D.; Hageluken, Hubert P.; and Temme, Karl, to Carl Kurt Walther GmbH & Co. KG. Vibration abrasive container. 4,195,447, Cl. 51-163.200.

Walther, Henning D.: *See*—
Walther, Carl K.; Walther, Henning D.; Hageluken, Hubert P.; and Temme, Karl, 4,195,447, Cl. 51-163.200.

Wang, Donald S. T.: *See*—
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Wang, Samuel S.; Lewellyn, Morris E.; and Smith, Eugene L., Jr., to American Cyanamid Company. Conditioning agent for froth flotation of fine coal. 4,196,092, Cl. 252-61.000.

Wang, Tse L.: *See*—
McEowen, James R.; Smith, Robert M.; and Wang, Tse L., 4,196,316, Cl. 179-18.0ES.

Ward, John J. B.: *See*—
Barnes, Clive; and Ward, John J. B., 4,196,063, Cl. 204-43.00R.

Ward, Peter. Manufacture of thin walled plastics material articles. 4,196,158, Cl. 264-25.000.

Ward, Peter, to Plastona (John Waddington) Ltd. Manufacture of plastics material articles. 4,196,164, Cl. 264-322.000.

Ward, Thomas D., to Harsco Corporation. Pleated filter underdrain, method and apparatus. 4,196,079, Cl. 210-80.000.

Warder, Ira T., Jr.: *See*—
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Kaplan, Howard I.; Bryce, Jerry H.; Johnston, Thomas J.; Pottinger, Jan M.; McMinn, Curtis J.; Tabereaux, Alton T.; Willett, John T.; and Richards, Nolan E., T993,002, Cl. 204-243.00R.

Petke, Frederick D.: *See*—
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Pottinger, Jan M.: *See*—
Kaplan, Howard I.; Bryce, Jerry H.; Johnston, Thomas J.; Pottinger, Jan M.; McMinn, Curtis J.; Tabereaux, Alton T.; Willett, John T.; and Richards, Nolan E., T993,002, Cl. 204-243.00R.

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Staniland, Philip A., to Imperial Chemical Industries Limited. Preparation of aromatic fluoro compounds. T993,005, 4-1-80, Cl. 260-591.000.

Tabereaux, Alton T.: *See*—
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Willett, John T.: *See*—
Kaplan, Howard I.; Bryce, Jerry H.; Johnston, Thomas J.; Pottinger, Jan M.; McMinn, Curtis J.; Tabereaux, Alton T.; Willett, John T.; and Richards, Nolan E., T993,002, Cl. 204-243.00R.

LIST OF REISSUE PATENTEES

TO WHOM

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NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Alexander, Frank B., Jr.; Capio, Cesar D.; Hauser, Victor E., Jr.; Levinstein, Hyman J.; Mogab, Cyril J.; Sinha, Ashok K.; and Wagner, Richard S., to Bell Telephone Laboratories, Incorporated. Radial flow reactor including glow discharge limitting shield. Re. 30,244, Cl. 118-723.000.

Amana Refrigeration, Inc.: *See*—
Fritts, Rex E., Re. 30,248, Cl. 219-10.55B.

Andrews, Harry N.; and Keller, Herbert W., to United States of America, Energy. Means for supporting fuel elements in a nuclear reactor. Re. 30,247, Cl. 176-78.000.

Bell Telephone Laboratories, Incorporated: *See*—
Alexander, Frank B., Jr.; Capio, Cesar D.; Hauser, Victor E., Jr.; Levinstein, Hyman J.; Mogab, Cyril J.; Sinha, Ashok K.; and Wagner, Richard S., Re. 30,244, Cl. 118-723.000.

Bussjager, Rudy C.: *See*—
del Toro, James J.; and Bussjager, Rudy C., Re. 30,242, Cl. 62-324.000.

Capio, Cesar D.: *See*—
Alexander, Frank B., Jr.; Capio, Cesar D.; Hauser, Victor E., Jr.; Levinstein, Hyman J.; Mogab, Cyril J.; Sinha, Ashok K.; and Wagner, Richard S., Re. 30,244, Cl. 118-723.000.

Carrier Corporation: *See*—
del Toro, James J.; and Bussjager, Rudy C., Re. 30,242, Cl. 62-324.000.

del Toro, James J.; and Bussjager, Rudy C., to Carrier Corporation. Heat pump system. Re. 30,242, Cl. 62-324.000.

Faulkner, Richard D., to RCA Corporation. Electron discharge device including an electron emissive electrode having an undulating cross-sectional contour. Re. 30,249, Cl. 313-104.000.

Fritts, Rex E., to Amana Refrigeration, Inc. Safety interlock system for microwave ovens. Re. 30,248, Cl. 219-10.55B.

Hauser, Victor E., Jr.: *See*—
Alexander, Frank B., Jr.; Capio, Cesar D.; Hauser, Victor E., Jr.; Levinstein, Hyman J.; Mogab, Cyril J.; Sinha, Ashok K.; and Wagner, Richard S., Re. 30,244, Cl. 118-723.000.

Keller, Herbert W.: *See*—
Andrews, Harry N.; and Keller, Herbert W., Re. 30,247, Cl. 176-78.000.

Levinstein, Hyman J.: *See*—
Alexander, Frank B., Jr.; Capio, Cesar D.; Hauser, Victor E., Jr.; Levinstein, Hyman J.; Mogab, Cyril J.; Sinha, Ashok K.; and Wagner, Richard S., Re. 30,244, Cl. 118-723.000.

McEvers, William R., Jr.: *See*—
Richter, Albert P., Jr.; and McEvers, William R., Jr., Re. 30,246, Cl. 175-65.000.

Medeco Security Locks, Inc.: *See*—
Oliver, Roy N., Re. 30,243, Cl. 70-38.00A.

Mogab, Cyril J.: *See*—
Alexander, Frank B., Jr.; Capio, Cesar D.; Hauser, Victor E., Jr.; Levinstein, Hyman J.; Mogab, Cyril J.; Sinha, Ashok K.; and Wagner, Richard S., Re. 30,244, Cl. 118-723.000.

Oliver, Roy N., to Medeco Security Locks, Inc. Padlock closure. Re. 30,243, Cl. 70-38.00A.

RCA Corporation: *See*—
Faulkner, Richard D., Re. 30,249, Cl. 313-104.000.

Richter, Albert P., Jr.; and McEvers, William R., Jr., to Texaco Inc. Methods and apparatus for driving a means in a drill string while drilling. Re. 30,246, Cl. 175-65.000.

Sinha, Ashok K.: *See*—
Alexander, Frank B., Jr.; Capio, Cesar D.; Hauser, Victor E., Jr.; Levinstein, Hyman J.; Mogab, Cyril J.; Sinha, Ashok K.; and Wagner, Richard S., Re. 30,244, Cl. 118-723.000.

Texaco Inc.: *See*—
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Wagner, Richard S.: *See*—
Alexander, Frank B., Jr.; Capio, Cesar D.; Hauser, Victor E., Jr.; Levinstein, Hyman J.; Mogab, Cyril J.; Sinha, Ashok K.; and Wagner, Richard S., Re. 30,244, Cl. 118-723.000.

Whalen Company, The: *See*—
Whalen, James J., Re. 30,245, Cl. 165-16.000.

Whalen, James J., to Whalen Company, The. Two-riser heating and cooling unit. Re. 30,245, Cl. 165-16.000.

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Duffett, William E.: *See*—
Mack, Grace H.; Jessel, Walter H., Jr.; and Duffett, William E., 4,517, Cl. 75.000.

Engelmann, Hermann H. Acanthus family. 4,516, 4-1-80, Cl. 88.000.

Herrera V., Camilo; and Saavedra, Reinalda, to Jardines de Los Andes Ltda. Chrysanthemum plant. 4,515, 4-1-80, Cl. 79.000.

Jardines de Los Andes Ltda.: *See*—
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Mack, Grace H.; Jessel, Walter H., Jr.; and Duffett, William E., 4,517, Cl. 75.000.

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Abelson, Mildred. Double ring. 254,606, 4-1-80, Cl. D11-34.000.

Aberer, James B.; Breeden, John W.; and Ostroski, Richard J., to Rival Manufacturing Company. Fire ladder rung. 254,630, 4-1-80, Cl. D25-69.000.

Albright, D. Janine. Pet carrier. 254,631, 4-1-80, Cl. D30-1.000.

American Cyanamid Company: *See*—
Grodin, Adam J., 254,598, Cl. D9-157.000.

American Home Products Corporation: *See*—
Kelly, Roger L., 254,587, Cl. D7-132.000.

American Sterilizer Company: *See*—
Brendgord, Thomas, 254,632, Cl. D26-65.000.

Amerine, James D.: *See*—
Parish, Richard L.; and Amerine, James D., 254,591, Cl. D8-2.000.

Anderson, Jane D. Combined adult's bath bib and baby's covering. 254,577, 4-1-80, Cl. D2-228.000.

Andover Controls Corporation: *See*—
Ault, Charles M., 254,613, Cl. D13-12.000.

Andrykovitz, Henry J. Revolving wire tumbler for removing flash from plastic molded parts. 254,619, 4-1-80, Cl. D15-124.000.

Ark-Seal Corporation: *See*—
Sperber, Henry V., 254,618, Cl. D15-122.000.

Atkins, Clyde D., to True Temper Corporation. Handle for garden shears. 254,592, 4-1-80, Cl. D8-5.000.

Attwood Corporation: *See*—
Hart, Marshall R., 254,595, Cl. D8-354.000.

Ault, Charles M., to Andover Controls Corporation. Programmable sequence controller. 254,613, 4-1-80, Cl. D13-12.000.

Bergenwall, Henning. Adjustable bed frame. 254,583, 4-1-80, Cl. D6-79.000.

Bialek, Stanley W., to Fidelity Electronics, Ltd. Electronic game board. 254,626, 4-1-80, Cl. D21-24.000.

Biller, Bruce A.; and Scherer, Henry W., to S & C Electric Company. Hinge mounting for a high voltage fuse. 254,614, 4-1-80, Cl. D13-35.000.

Bolen, Bruce J., to Norlin Industries, Inc. Guitar or similar article. 254,621, 4-1-80, Cl. D17-19.000.

Breeden, John W.: *See*—
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Brendgord, Thomas, to American Sterilizer Company. Surgical light. 254,632, 4-1-80, Cl. D26-65.000.

Carrara & Matta S.p.A.: *See*—
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Cassels, Miguel A. Tennis shoe sole. 254,579, 4-1-80, Cl. D2-321.000.

Christen Incorporated: *See*—
Christen, Louis J., Jr., 254,589, Cl. D7-151.000.

Christen, Louis J., Jr., to Christen Incorporated. Ladle. 254,589, 4-1-80, Cl. D7-151.000.

Crane, William J. Birthday flag or banner. 254,607, 4-1-80, Cl. D11-172.000.

Davis, Frances H. Blouse or the like. 254,576, 4-1-80, Cl. D2-219.000.

deSantis, Albert. Collapsible seat. 254,582, 4-1-80, Cl. D6-66.000.

Doyel, John S. Kitchen slicer. 254,590, 4-1-80, Cl. D7-153.000.

Earle, William. Mailbox. 254,635, 4-1-80, Cl. D99-33.000.

Evans, David M.; and Scherer, Henry W., to S & C Electric Company. Hinge mountings for high voltage of use. 254,615, 4-1-80, Cl. D13-35.000.

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Filac Corporation: *See*—
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Finn, Norman H., to United States Shoe Corporation, The. Open toe wedgie sneaker with crossed vamp. 254,578, 4-1-80, Cl. D2-296.000.

Gatton, James W. Belt mounted battery-type electrical power unit. 254,612, 4-1-80, Cl. D13-11.000.

Geberit AG: *See*—
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General Motors Corporation: *See*—
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Gosswiller, Earl W., to Federal Signal Corporation. Combined light and siren speaker housing for emergency vehicle. 254,603, 4-1-80, Cl. D10-114.000.

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Grodin, Adam J., to American Cyanamid Company. Bottle or similar article. 254,598, 4-1-80, Cl. D9-157.000.

Hart, Marshall R., to Attwood Corporation. Two piece deck mounted anchor chock. 254,595, 4-1-80, Cl. D8-354.000.

Hartung, Philip F. Bottle. 254,597, 4-1-80, Cl. D9-149.000.

Hogue, Steven J. Combined food jar scraper and food spreader. 254,588, 4-1-80, Cl. D7-149.000.

Jones, George P., III. Camping provisions kit. 254,600, 4-1-80, Cl. D9-193.000.

Kassai Kabushiki Kaisha: *See*—
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Kelly, Charles M.; and Keffer, Francis C. Hand-held shower head. 254,627, 4-1-80, Cl. D23-35.000.

Kelly, Roger L., to American Home Products Corporation. Handle for a culinary tool. 254,587, 4-1-80, Cl. D7-132.000.

Koves, Thomas. Base for a drafting table. 254,586, 4-1-80, Cl. D6-196.000.

Lathers, Michael W.: *See*—
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LeCaire, Robert A., Jr.; and Glashagel, Barry B., to Presto Products Incorporated. Wall mounted plastic bag dispenser. 254,585, 4-1-80, Cl. D6-130.000.

Linto, Roger. Combined auxiliary seat storage device and audio unit for jeep type vehicle. 254,581, 4-1-80, Cl. D6-48.000.

Linto, Roger. Combined storage compartment, auxiliary rear seat and audio unit for a jeep type vehicle. 254,611, 4-1-80, Cl. D12-155.000.

Maxwell, Melvin O.: *See*—
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Norsk Hydro a.s: *See*—
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Parish, Richard L.; and Amerine, James D., to O. M. Scott & Sons Company. Combined fertilizer and pesticide applicator for plants. 254,591, 4-1-80, Cl. D8-2.000.
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Plecko, Ivo. Fastener for perforated documents. 254,623, 4-1-80, Cl. D19-65.000.
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Pummer, Roland C., to Timex Corporation. Electrooptic digital alarm face. 254,605, 4-1-80, Cl. D10-125.000.
Reiner, Ralph E. Frame for hydraulic jack press or the like. 254,620, 4-1-80, Cl. D15-141.000.
Renko, Sandi, to Carrara & Matta S.p.A. Holder for toilet implements. 254,584, 4-1-80, Cl. D6-91.000.
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Robley, Spencer H. Tennis ball carrier. 254,580, 4-1-80, Cl. D2-400.000.
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Ziaylek, Theodore, Jr., to Ziaylek, Theodore, Jr. Housing for boat light. 254,634, 4-1-80, Cl. D26-36.000.

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425.6 4,195,526
434 4,195,527
579 4,195,528
638 4,195,529
4,195,530
723 4,195,531
849 4,195,532

CLASS 74

3.2 4,195,533
491 4,195,534
493 4,195,535
759 4,195,536
781 R 4,195,537

CLASS 75

60 4,195,985
82 4,195,986
122 4,195,987
165 4,195,988
175.5 4,195,989

CLASS 82

27 4,195,538

CLASS 83

44 4,195,539
95 4,195,540
577 4,195,541
664 4,195,542
794 4,195,543

CLASS 84

1.19 4,195,544
1.26 4,195,545
318 4,195,546

CLASS 85

74 4,195,547

CLASS 86

1 R 4,195,548

CLASS 87

1 4,195,549

CLASS 89

27 B 4,195,550

CLASS 91

358 A 4,195,551
443 4,195,552
497 4,195,553

CLASS 92

146 4,195,554

CLASS 93

36.8 4,195,555
58 ST 4,195,556
59 R 4,195,557

CLASS 99

325 4,195,558
353 4,195,559
422 4,195,560
455 4,195,561

CLASS 100

39 4,195,562
99 4,195,563
231 4,195,564
266 4,195,565

CLASS 101

38 R 4,195,566
115 4,195,567
216 4,195,568
248 4,195,569
348 4,195,570

CLASS 102

89 CD 4,195,571
90 4,195,572
92.7 4,195,573
213 4,195,574
232 4,195,575

CLASS 105

147 4,195,576

CLASS 106

18.16 4,196,005
22 4,196,006
4,196,007
38.2 4,196,011
48 4,196,004
115 4,196,008
137 4,196,012
281 R 4,196,013
287.13 4,196,014
287.24 4,196,015
309 4,196,016

CLASS 108

31 4,195,577
144 4,195,578

CLASS 109

52 4,195,579

CLASS 112

79 R 4,195,580
103 4,195,581
121.11 4,195,582
158 A 4,195,583
222 4,195,584
277 4,195,585

CLASS 113

54 R 4,195,586

CLASS 114

218 4,195,587

CLASS 115

18 E 4,195,588

CLASS 116

212 4,195,589

CLASS 118

505 4,195,590
655 4,195,591
723 Re.30,244

CLASS 119

17 4,195,592
19 4,195,593
52 B 4,195,594
103 4,195,595

CLASS 122

149 4,195,596

CLASS 123

30 C 4,195,597
32 EA 4,195,598
4,195,599
73 AA 4,195,600
78 E 4,195,601
97 B 4,195,602
117 R 4,195,603
119 A 4,195,604
4,195,605
119 B 4,195,607
119 E 4,195,606
136 4,195,608
139 AZ 4,195,610
139 E 4,195,609
148 D 4,195,611
190 BA 4,195,612
192 B 4,195,613

CLASS 124

1 4,195,614
16 4,195,615
24 R 4,195,616

CLASS 126

5 4,195,617
120 4,195,618
204 4,195,619
415 4,195,622
416 4,195,621
425 4,195,620
4,195,775

CLASS 127

41 4,196,017

CLASS 128

1 D 4,195,623
8 4,195,624
62 A 4,195,625
159 4,195,630
201.27 4,195,628
202.26 4,195,627
206.13 4,195,629
214 R 4,195,631
272 4,195,632
276 4,195,633
290 R 4,195,634
330 4,195,635
346 4,195,636
348 4,195,637
360 4,195,638
481 4,195,639
579 R 4,195,640
632 4,195,641
689 4,195,642
774 4,195,626
779 4,195,643

CLASS 130

27 JT 4,195,644

CLASS 131

2 4,195,645
140 P 4,195,647
140 R 4,195,646
237 4,195,648
261 R 4,195,649

CLASS 132

83 R 4,195,650

CLASS 134

6 4,196,018
104 4,196,019
167 R 4,196,020

CLASS 135

2 4,195,651

CLASS 137

43 4,195,652
206 4,195,653
238 4,195,654
340 4,195,655
458 4,195,656
460 4,195,657
462 4,195,658
501 4,195,659
512.1 4,195,660
515.5 4,195,661
554 4,195,662
599.2 4,195,663
613 4,195,664
624.18 4,195,665
625.4 4,195,666
637.1 4,195,667

CLASS 138

30 4,195,668
178 4,195,669

CLASS 139

192 4,195,670
455 4,195,671

CLASS 141

91 4,195,672
349 4,195,673
392 4,195,674

CLASS 144

120 4,195,675

CLASS 148

2 4,196,021
6 4,196,022
6.15 R 4,196,023
23 4,196,024
36 4,196,025

CLASS 149

46 4,196,026

CLASS 150

1.6 4,195,676
52 G 4,195,677

CLASS 151

34 4,195,678

CLASS 152

359 4,195,679

CLASS 156

62.2 4,196,027
71 4,196,028
89 4,196,029
91 4,196,030
143 4,196,031
158 4,196,032
196 4,196,033
204 4,196,034
361 4,196,035
422 4,196,036
429 4,196,037
433 4,196,038
580.1 4,196,039
584 4,196,040
616 R 4,196,042
620 4,196,041

CLASS 160

166 A 4,195,680
371 4,195,681

CLASS 162

30 K 4,196,043
112 4,196,044
117 4,196,045
362 4,196,046

CLASS 164

6 4,195,682
10 4,195,683
416 4,195,684
420 4,195,685

CLASS 165

1 4,195,686
16 Re.30,245
129 4,195,687
133 4,195,688

CLASS 166

246 4,195,689
281 4,195,690
315 4,195,691

CLASS 169

25 4,195,692
53 4,195,693
70 4,195,694

CLASS 172

1 4,195,695
451 4,195,696
730 4,195,697

CLASS 173

44 4,195,698

CLASS 174

47 4,196,307
84 C 4,196,308
94 R 4,196,309

CLASS 175

27 4,195,699
65 Re.30,246
340 4,195,700
4,195,701

CLASS 176

15 4,196,047
19 R 4,196,048
4,196,049
78 Re.30,247

CLASS 178

22 4,196,310

CLASS 179

1 G 4,196,314
1 M 4,196,313
18 ES 4,196,316
37 4,196,317
84 VF 4,196,318
146 R 4,196,319
170 J 4,196,320
175.2 R 4,196,321

CLASS 180

7 R 4,195,703
14 R 4,195,704
132 4,195,706
183 4,195,702
205 4,195,705

CLASS 181

138 4,195,707

CLASS 182

2 4,195,708
90 4,195,709

CLASS 184

1.5 4,195,710
55 A 4,195,711

CLASS 187

29 R 4,195,712

CLASS 188

1 B 4,195,713
71.5 4,195,714
210 4,195,715

CLASS 192

0.092 4,195,720
3 R 4,195,716
18 A 4,195,717
67 R 4,195,718
89 B 4,195,719
105 CD 4,195,721
131 R 4,195,722

CLASS 196

122 4,196,050

CLASS 198

461 4,195,723
626 4,195,724
718 4,195,725
781 4,196,312
812 4,195,726

CLASS 200

5 R 4,196,322
11 DA 4,196,324
51.04 4,196,323
67 A 4,196,325
81 R 4,196,326
144 B 4,196,327
246 4,196,328

CLASS 201

24 4,196,051

CLASS 202

138 4,196,052
227 4,196,053
4,196,054

CLASS 204

1 T 4,196,055
4,196,056
4,196,057
15 4,196,058
28 4,196,059
4,196,060
33 4,196,061
36 4,196,062
43 R 4,196,063
147 4,196,064
159.15 4,196,066
159.17 4,196,065
243 M 4,196,067
255 4,196,068
257 4,196,069
266 4,196,070
4,196,071

CLASS 206

45 4,195,727
45.33 4,195,728
45.34 4,195,729
221 4,195,730
222 4,195,731
391 4,195,732
444 4,195,733
558 4,195,734

CLASS 208

10 4,196,072

CLASS 209

167 4,196,073
510 4,195,735
516 4,195,736
521 4,195,737

CLASS 210

3 4,196,074
19 4,196,075
21 4,196,076
22 R 4,196,077
75 4,196,078
80 4,196,079
83 4,196,080
94 4,196,081
180 4,196,082
193 4,196,083
224 4,196,084
232 4,196,085
4,196,086
242 S 4,196,087
435 4,196,088

CLASS 211

41 4,195,738
113 4,195,739

CLASS 212

66 4,195,740
4,195,741

CLASS 213

75 TC 4,195,742

CLASS 217

265 4,195,743

CLASS 219

10.55 B Re.30,248
4,196,330
4,196,332
10.55 E 4,196,331
10.81 4,196,329
60 A 4,196,333
61 4,196,334
73 4,196,335
76.15 4,196,336
121 EM 4,196,337
203 4,196,338
243 4,196,339
245 4,196,340
295 4,196,341
364 4,196,343
385 4,196,342

CLASS 220

1.5 4,195,744
2.2 4,195,745
4 E 4,195,746
23.2 4,195,747
258 4,195,748
268 4,195,749
288 4,195,750

CLASS 221

17 4,195,751

CLASS 222

61 4,195,752
70 4,195,753
146 C 4,195,754
146 HE 4,195,755
182 4,195,756

CLASS 224

31 4,195,757

CLASS 225

98 4,195,758
103 4,195,759
4,195,760

CLASS 226

115 4,195,761

CLASS 227

156 4,195,762

CLASS 228

29 4,195,763
208 4,195,764

CLASS 229

52 B 4,195,765

CLASS 233

26 4,195,766

CLASS 235

90 4,195,767
92 CT 4,196,344
103 4,195,768
380 4,195,771
435 4,196,345
441 4,195,772
495 4,195,773

CLASS 236

13 4,195,774

CLASS 237

12.3 B 4,195,777
51 4,195,778

CLASS 238

10 F 4,195,776

CLASS 239

8 4,195,779
73 4,195,780
177 4,195,781
230 4,195,782
533.3 4,195,783
542 4,195,784
566 4,195,785

CLASS 241

101.7 4,195,786

CLASS 242

1 4,195,787
18 PW 4,195,788
35.5 A 4,195,789
37 R 4,195,790
45 4,195,791
72 B 4,195,792
84.2 R 4,195,793
99 4,195,794
107.4 A 4,195,795
199 4,195,796
4,195,797

CLASS 244

1 TD 4,195,798
3.13 4,195,799
8 4,195,800
16 4,195,801
17.13 4,195,802
111 4,195,803
161 4,195,804

CLASS 246

428 4,195,805

CLASS 248

70 4,195,806
74 A 4,195,807
219.1 4,195,808

CLASS 249

205 4,195,809

CLASS 250

229 4,196,348
231 SE 4,196,349
315.2 4,196,350
416 TV 4,196,351
445 T 4,196,352
456 4,196,353
494 4,196,354
516 4,196,355

CLASS 251

5 4,195,810
30 4,195,811
148 4,195,812
203 4,195,813
205 4,195,814
229 4,195,816
306 4,195,815
340 4,195,817

CLASS 252

42.7 4,196,089
49.9 4,196,090
51.5 A 4,196,091
61 4,196,092
99 4,196,093
103 4,196,094
140 4,196,095
414 4,196,096
429 C 4,196,097
430 4,196,098
437 4,196,099
439 4,196,100
4,196,101
457 4,196,102
541 4,196,103
542 4,196,104

CLASS 254

94 4,195,818
186 R 4,195,819

CLASS 260

2.3 4,196,105
5 4,196,106
17 R 4,196,107
18 N 4,196,108
20 4,196,109
23 S 4,196,111
23 XA 4,196,110
23.7 M 4,196,112
4,196,113
28 P 4,196,114
28.5 B 4,196,115
42.18 4,196,116
45.7 P 4,196,118
45.7 PH 4,196,117
45.95 C 4,196,119
112 B 4,196,121
112.5 R 4,196,122
239 A 4,196,124
343.3 R 4,196,127
345.2 4,196,128
346.11 4,196,130
346.3 4,196,129
347.8 4,196,131
396 R 4,196,132
397.2 4,196,133
404.8 4,196,134
429 R 4,196,135
429.7 4,196,136
4,196,137
440 4,196,138
453 R 4,196,140
456 P 4,196,120
545 P 4,196,141
562 B 4,196,142
567.6 M 4,196,143
571 4,196,144
573 4,196,145
576 4,196,146
577 4,196,147
582 4,196,148
583 E 4,196,149
593 H 4,196,150
601 R 4,196,151
609 E 4,196,152
665 R 4,196,153
4,196,154
931 4,196,155

CLASS 261

39 B 4,196,156
155 4,196,157

CLASS 264

25 4,196,158
29.1 4,196,159
40.4 4,196,160
71 4,196,161
131 4,196,162
148 4,196,163
322 4,196,164
530 4,196,165

CLASS 266

87 4,195,820
156 4,195,821
165 4,195,822
233 4,195,823
246 4,195,824
271 4,195,825

CLASS 267

137 4,195,826

CLASS 269

2 4,195,827
43 4,195,828
325 4,195,829

CLASS 271

8 R 4,195,830
274 4,195,832
302 DAS 4,195,831

CLASS 272

95 4,195,833
118 4,195,834
137 4,195,835

CLASS 273

1 R 4,195,836
81 R 4,195,837
88 4,195,838
145 C 4,195,841
171 4,195,842
346 4,195,839
406 4,195,840

CLASS 274

1 A 4,195,843
9 B 4,195,844
9 R 4,195,845
10 S 4,195,848
15 R 4,195,846
47 4,195,847

CLASS 277

12 4,195,849
4,195,850
27 4,195,851
92 4,195,852
4,195,853
153 4,195,854
166 4,195,855

CLASS 280

81 R 4,195,856
87.04 A 4,195,857
95 R 4,195,858
112 R 4,195,859
460 A 4,195,860
489 4,195,861
661 4,195,862
689 4,195,863

CLASS 283

56 4,195,864

CLASS 285

18 4,195,865

CLASS 292

127 4,195,866
174 4,195,867
256.67 4,195,868
4,195,869
340 4,195,870

CLASS 294

16 4,195,871
82 R 4,195,872
106 4,195,873

CLASS 296

1 F 4,195,875
1 S 4,195,874
97 G 4,195,876
172 4,195,877

CLASS 297

83 4,195,878
184 4,195,879
194 4,195,880
216 4,195,881
242 4,195,882
302 4,195,883
362 4,195,884

CLASS 299

1 4,195,885
11 4,195,886

CLASS 305

42 4,195,887

CLASS 307

117 4,196,356
200 B 4,196,357
243 4,196,358
268 4,196,359
270 4,196,360
310 4,196,361
350 4,196,362
362 4,196,363

CLASS 310

23 4,196,365
162 4,196,366

CLASS 312

214 4,195,888
240 4,195,889
257 R 4,195,890

CLASS 313

59 4,196,367
104 Re.30,249
345 4,196,368
365 4,196,369
413 4,196,370
456 4,196,371

CLASS 315

10 4,196,372
14 4,196,373
58 4,196,374

CLASS 316

5 4,195,891
20 4,195,892

CLASS 318

6 4,196,375
78 4,196,376
269 4,196,377
438 4,196,378
601 4,196,379
630 4,196,380

CLASS 323

23 4,196,381
75 A 4,196,382

CLASS 324

58.5 B 4,196,385
73 PC 4,196,386
107 4,196,387
128 4,196,388
158 R 4,196,389
262 4,196,390
328 4,196,391
438 4,196,383
446 4,196,384

CLASS 330

4.3 4,196,396
84 4,196,397

CLASS 331

9 4,196,398
94.5 C 4,196,402
94.5 G 4,196,399
4,196,400
4,196,401
4,196,403
116 FE 4,196,404

CLASS 333

16 4,196,405
141 4,196,406
191 4,196,407

CLASS 336

94 4,196,408

CLASS 337

198 4,196,409

CLASS 338

185 4,196,410
314 4,196,411

CLASS 339

14 R 4,195,893
4,195,894
4,195,895
18 B 4,195,896
45 R 4,195,897
99 R 4,195,898
103 M 4,195,899
125 R 4,195,900
198 GA 4,195,901
258 S 4,195,902

CLASS 340

32 4,196,412
52 F 4,196,413
58 4,196,414
75 4,196,415
147 R 4,196,416
151 4,196,417
152 T 4,196,418
347 AD 4,196,419
4,196,420
4,196,421
542 4,196,422
566 4,196,423
572 4,196,424
573 4,196,425
600 4,196,393
629 4,196,426
634 4,196,427
636 4,196,428
669 4,196,429
726 4,196,430
749 4,196,431
784 4,196,432

CLASS 343

6 R 4,196,433

6.5 R 4,196,434
17.2 PC 4,196,435
854 4,196,436

CLASS 346

1.1 4,196,437

CLASS 350

36 4,195,903
68 4,195,904
83 4,195,905
96.23 4,195,906
96.32 4,195,907
151 4,195,908
162 R 4,195,909
167 4,195,910
171 4,195,911
184 4,195,912
292 4,195,913
294 4,195,914
345 4,195,915
346 4,195,916
357 4,195,917

CLASS 351

158 4,195,918
160 R 4,195,919

CLASS 353

26 A 4,195,920

CLASS 354

21 4,195,921
79 4,195,922
91 4,195,923
197 4,195,924
270 4,195,925
273 4,195,926

CLASS 355

3 TE 4,195,927
51 4,195,928

CLASS 356

28 4,195,425
32 4,195,929
301 4,195,930
346 4,195,931
407 4,195,932

CLASS 357

15 4,196,438
22 4,196,439
35 4,196,440
41 4,196,441
67 4,196,442
68 4,196,443
81 4,196,444

CLASS 358

8 4,196,445
74 4,196,446
82 4,196,447
135 4,196,448
183 4,196,449
256 4,196,450
283 4,196,451

4,196,452
4,196,453
4,196,454
296 4,196,455

CLASS 360

106 4,196,456
129 4,196,457

CLASS 361

33 4,196,462
113 4,196,463
215 4,196,464
228 4,196,465
239 4,196,466
399 4,196,467

CLASS 362

10 4,196,458
66 4,196,459
231 4,196,460
259 4,196,461

CLASS 363

75 4,196,468
131 4,196,469

CLASS 364

200 4,196,470
426 4,196,471
431 4,196,472
449 4,196,473
461 4,196,474
482 4,196,475
900 4,196,476

CLASS 366

2 4,195,933
76 4,195,934
325 4,195,935

CLASS 368

90 4,195,471

CLASS 370

48 4,196,311
102 4,196,315

CLASS 371

20 4,195,769
21 4,195,770

CLASS 400

120 4,195,937
124 4,195,936
4,195,938
427 4,195,939
568 4,195,940

CLASS 401

214 4,195,941

CLASS 403

13 4,195,942
242 4,195,943
326 4,195,944

CLASS 404

16 4,195,945
75 4,195,946
117 4,195,947

CLASS 405

3 4,195,948
185 4,195,949
195 4,195,950
210 4,195,951
257 4,195,487
259 4,195,952
300 4,195,953

CLASS 406

135 4,195,954

CLASS 407

40 4,195,955
108 4,195,956

CLASS 408

148 4,195,957

CLASS 414

24.6 4,195,958
35 4,195,959
49 4,195,960
120 4,195,961
659 4,195,962
786 4,195,963

CLASS 415

160 4,195,964
213 R 4,195,965

CLASS 416

18 4,195,966
134 A 4,195,967

CLASS 417

17 4,195,968
247 4,195,969
269 4,195,970
366 4,195,971

CLASS 422

33 4,196,166
61 4,196,167
134 4,196,168
159 4,196,169
171 4,196,170
246 4,196,171

CLASS 423

167 4,196,172
210 4,196,173
230 4,196,174
242 4,196,175
248 4,196,176
279 4,196,177
290 4,196,178
300 4,196,179
321 S 4,196,180
446 4,196,181
449 4,196,182

573 G 4,196,183
639 4,196,184

CLASS 424

1 4,196,185
12 4,196,186
21 4,196,187
37 4,196,188
4,196,189
47 4,196,190
89 4,196,191
92 4,196,192
114 4,196,193
177 4,196,123
4,196,194
4,196,195
178 4,196,196
180 4,196,197
4,196,198
4,196,199
4,196,200
4,196,201
199 4,196,202
242 4,196,203
243 4,196,204
246 4,196,205
250 4,196,206
251 4,196,207
263 4,196,208
267 4,196,209
4,196,210
274 4,196,211
275 4,196,212
4,196,213
278 4,196,250
283 4,196,214
308 4,196,215
309 4,196,216
316 4,196,217
318 4,196,218

CLASS 426

89 4,196,219
105 4,196,220
235 4,196,221
264 4,196,222
268 4,196,223
483 4,196,224
523 4,196,225
551 4,196,226

CLASS 427

67 4,196,227
88 4,196,228
158 4,196,229
228 4,196,230
240 4,196,231
249 4,196,233
291 4,196,234
356 4,196,235
374 B 4,196,236
419.1 4,196,237

CLASS 428

11 4,196,238
17 4,196,239

35 4,196,240
92 4,196,241
138 4,196,242
147 4,196,243
159 4,196,244
198 4,196,245
213 4,196,246
216 4,196,247
225 4,196,248
242 4,196,249
246 4,196,252
311 4,196,251
323 4,196,253
341 4,196,254
421 4,196,255
422 4,196,256
447 4,196,258
457 4,196,257
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